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The Spanish-Place Chapel Competition.

THE nine designs submitted in a limited competition for the new R. C. Chapel, proposed to be erected in place of the small church in Spanish-place, Manchester-square, were on view on last Saturday and Monday at the Convent, No. 9, Lower Seymour-street. The architects who were invited, the invitation being restricted to such as were members of the Roman Catholic communion, were Messrs. Herbert Gribble; Goldie, Child, & Goldie; Pugin & Pugin; Dunn & Hansom; Leonard Stokes; W. H. Pownall; J. Kelly; C. G. Wray; and A. E. Purdie. No premiums were offered, and we rather regret to observe that the conditions were fenced with a proviso that the promoters of the work did not bind themselves to accept the work or employ the talents of any one of the competing architects. This was, perhaps, only a formal safeguarding, but it looks rather shabby in a case where no remuneration of any kind was offered; and under the circumstances we must congratulate the Rev. Fathers on having been so well served by their lay brethren, for certainly no trouble has been spared in getting up most of the designs, which are of a high average of merit.

It may be mentioned that the church in Spanish-place, dedicated to St. Jago, the patron saint of Spain, was originally a private chapel attached to the Spanish Embassy, and the new church is about to be built partly by funds contributed by the King of Spain. A tribune is to be reserved for the Spanish Ambassador in the new building.

The new church is to seat 2,000 persons and to be raised on a basement story, with a presbytery attached, and to be in the Early English style "as practised in the twelfth and thirteenth centuries." The basement is specified to contain a confraternity-room, committee-rooms, store-rooms, and fireproof-rooms for heating apparatus. In regard to the church, the sanctuary is to be 30 ft. in length or depth, to be well lighted, and to be treated as the most important portion of the interior (this we should have thought went without saying); the altar step or predella to be 6 ft. above the nave floor. An organ-gallery is to be provided on one side of the interior, with space for sixty singers; there are to be five altars besides the high altar, and a baptistery, and eight confessionals, which are to be so arranged as not to project into the general area of the building. There are to be two main entrances, one from George-street and one from South-street, besides another smaller entrance from South-street, and two sacristies with basements under them. The outside measurement of the site is 158 ft. by 80 ft., and the stipulated cost not to exceed 20,000*l.*, exclusive of basement story and tower spire; a somewhat odd way of putting it, since, though the tower and spire may be deferred till funds are forthcoming, the basement obviously cannot. The site is irregular in form, and somewhat awkward to treat; and it may be observed that all the competitors, except Messrs. Dunn & Hansom, have reversed the usual orientation, and placed what is ritualistically the east end at the western end of the site. The reason for this, we understand, is that the property adjoining the western boundary, which is part of the Portland estate, is not likely ever to be purchaseable or negotiable, while that at the eastern end may be acquired at some future date; and as a church cannot well be lengthened from the sanctuary end, but may be easily lengthened from the nave end, it was thought best to place the nave in contiguity with the point of least resistance to further extension.

Taking the designs in the order in which they were hung, that by Mr. Pownall shows a three-aisled plan, with recessed chapels mostly on the north side and confessionals on the south; the main entrance and tower over at the south-east angle, the position in which most of the competitors have placed this feature. The style is very plain Early Geometrical; the interior is shown in a well-executed pen perspective, and is solid in effect, but not of the most refined order of detail. The sanctuary does not seem to fulfil the conditions of being well lighted, and the organ is too much "cornered" for effect, a matter constantly overlooked by church architects. The design is a fair working out of the problem, but not more.

It may be observed that the site widens from the east to the west end (we are using "east" and "west" throughout as the points of the compass, not in the ritual sense), so that both flanks of the building cannot be parallel to the street boundaries. The majority of the competitors have placed the building with its north flank parallel with and adjoining South-street on the north side, leaving the south side towards George-street as the one to play with in the way of projections; the porch and tower filling up a portion of the space between the street and the main building at one end, and the presbytery or clergy house filling up the wider space left at the other end. The comparatively shallow sanctuary taking the place of the larger chancel now in use in the Anglican Church, most of the plans partake more or less of the basilica form with an apse at the sanctuary end.

Messrs. Goldie, Child, & Goldie's design is five-aisled, a disposition to which the rather broad proportions of the site somewhat naturally lead; indeed, it is evident that the shortness of the site in comparison with its width has hampered all the competitors a little in the matter of architectural proportion, though it has led to one or two effective devices for overcoming this difficulty of dealing with a church the importance of which demands that it should be lofty, while the measurements prevent its being proportionately long. The confessionals are arranged between internal buttresses against the north and south walls of the eastern portion of the nave, which externally spreads a little wider than the western portion. The organ is got much better forward and into the church than in the last-named design. The style is of a very pure Early English type, well worked out in detail; the interior is shown in a very fine coloured perspective; Purbeck marble shafts are largely employed in the piers and as vaulting shafts. Externally the authors have availed themselves of the five-aisled arrangement for piling up a crowd of flying buttresses in a double tier, and thus giving a mountainous effect to the structure, which they have endeavoured further to supplement by a considerable use of large turrets with lofty conical finials; the two sets supporting the angles of the tower and spire, above and below the springing of the spire, make a little too much of this kind of outline. The transept gables are effectively treated with sculpture and diaper ornament in the interspaces. The stairs to the triforium are well placed close to the George-street entrance, in a small projecting apse of their own. The confessionals internally are placed beneath low segmental arches opening towards the nave, between the main piers. The exterior indication of the confessionals, in the way of lighting, is various and characteristic in some of the designs; in the one we are now mentioning it is done by little gablet lights on the edge of the lean-to roof which covers them. This is better than the narrow wall-slits used in one or two of the designs, which have too utilitarian an appearance. The design could hardly be carried out as shown for the 20,000*l.* stipulated.

Mr. Herbert Gribble sends a fine set of drawings of a church in purely English Gothic style, a little later and more ornate in the matter of tracery than some others. His is a three-aisled plan, with confessionals between internal buttresses, as before. The sanctuary is square-ended externally and internally on the ground-floor, but becomes an octagon apse

above, with the canted sides carried on squinch arches. The organ-chamber is too much cornered, the sanctuary could not be said to be particularly well lighted, and the baptistery seems rather small and cramped for effect, though it may be large enough practically. Otherwise, this is a remarkably fine design; the interior, shown in a very fine pen-drawing, is lofty in effect, and refined in detail; the spire and tower show much grace of composition and richness of effect. The designer has in this case boldly turned the tower so as to stand square with the George-street boundary, and at an angle with the church, with unusual but not unpicturesque effect. The treatment of the buttresses, which are broad and solid, but broken by niches with statues in the middle stage, is very effective. The confessionals are externally lighted by small trefoil-cusped windows. If not very original, this design, for architectural beauty and completeness, stands very high.

Mr. Kelly's design has the reverse merits; it is decidedly original and clever, but not altogether beautiful. He is one of the competitors who has attempted especial treatment suited to a short and broad site, and on a building mainly Gothic in detail (though not quite "as practised in the twelfth and thirteenth centuries") he has engrafted a segmental central dome, the whole disposition being founded on Byzantine lines. The plan is three-aisled, with an abnormally wide centre aisle, but the arcade is interrupted by the large piers for the arches which carry the pendentives and the central dome. The sanctuary is a large semicircular apse with an ambulatory and arcade round it, carried on cylindrical piers. The baptistery, which, as in all the designs but one, is at the east end facing the sanctuary, is nearly circular and cut off a good deal from the church. The confessionals and chapels are not sufficiently amalgamated with the architectural design; they do not form an integral part of it on the plan; it is more as if certain spaces on the wall were arbitrarily called chapels and confessionals: this architecturally is an incompleteness. The organ and choir are cramped for space and far too high up for effect. The turrets flanking the dome, and the lofty wire-drawn tower and spire, are anything but satisfactory; the latter looks better in the perspective view than the tower drawn on the elevation could possibly look. The interior is shown in a somewhat powerful but rather splashy pen-drawing, with the dome shown as no dome looking from the floor of the church ever could be seen. This, however, is a failing common to nearly all draughtsmen who essay to make drawings of dome interiors; they *will* show the dome, regardless of the possibilities of angles of vision; and we never saw a set of competition drawings of domed interiors in which all the domes did not look as if they were endeavouring to crawl down the wall on to the floor. With many defects of detail, however, this design has the great merit of original treatment, arising out of the circumstances of the site.

Mr. Leonard Stokes's design also shows special treatment on plan for a wide site. The nave commences as a five-aisled one, but expands into a central area somewhat after the manner of St. Stephen's, Walbrook, only that the supporting points are arranged on a hexagon instead of an octagon. The sanctuary end is tri-apsal (internally), with semi-octagonal apses, the two side ones forming chapels. Contrary to the arrangement of most of the other plans, the tower is placed at the north-west angle, towards South-street; and the main entrance from George-street is placed at the centre of the south side, with two external porches giving access to a semicircular arcaded vestibule, whence an inner door leads into the church at the point where its south wall forms a tangent to the semicircle. This is a very pretty bit of architectural effect. There is a separate entrance and cloister leading to the baptistery, at the east end, where most of the others have placed their main porch. The central space is treated not as a cupola, but as a kind of transept with arches thrown across the angles. The main roof-line is unbroken, and the central treatment only indicated by the fenestration; we should have preferred to see it marked in some way in the roofing. The organ and singing gallery occupy the whole width of one side of this central space, a very good position acoustically, as the sound is not shut off by any intervening walls and piers. The confessionals are placed between internal buttresses, and marked externally by small couplet windows. The design is apparently intended for execution mainly in brickwork externally, and is simple and severe in style. The tower has a massive and almost unbroken lower stage, with a stage of large and high lancet windows in triplets above, and high lucarnes at the base of the spire. The interior, which is shown in an exceedingly fine pen-drawing, is lofty in effect, and the triforium gallery, instead of being over the main arcade, which would have thrown it too high, is represented by a gallery crossing the middle height of the main piers, in the manner found in a good many German churches, as also at Southwell. It is not a genuine triforium, in fact, but is more useful for any practical purpose to which it may be put, and does not interfere with the general effect of the interior,—indeed, it is of constructional value in giving lateral support to the lofty and not very massive piers. The treatment of the vaulting over the centre area is unusual and very graceful in effect. As a whole, this is a very fine design shown in an admirable set of drawings.

Mr. Wray sends a design of a three-aisled church of a somewhat ordinary Gothic type, with an attempt at originality in the treatment of the spire, which rises off a large open stage with very inadequate-looking piers; the architect has intended something piquant, but not very successfully. The roof is of timber (nearly all the others have groined vaulting), with a segmental section at the actual ceiling, and large trussed and foliated brackets below, which we fear must be called rather "gim-crack" in style. A very finely-coloured interior view is shown.

Mr. E. A. Purdie's design also is one that has not much to recommend it in comparison with the best of the others; it is what may be termed regulation Gothic, correct and with no offence against taste, but not exhibiting any very special merit. The plan is three-aisled, and the sanctuary a rather small semi-octagon apse; the baptistery also is rather small, and the organ space very much cramped. The design shows a massive square tower with angle pinnacles and no spire.

Messrs. Pugin & Pugin are true to their family architectural traditions, and go in for lofty effect, internally especially, where very lofty arches and slender piers fly upwards to culminate in an open-timber roof designed also so as to accentuate height as much as possible. The sanctuary end is triapsal, the apses being semi-octagon, but the central one breaks into the sixteen-sided figure above. The general style is somewhat later than that adopted by most of the competitors, and almost purely English; the clearstory has triple lancets, the triforium coupled windows, each in two lights with Early Geometric tracery. The roof being timber no flying buttresses are required, but the aspiring and pyramidal effect of the exterior is sufficiently realised without them. The whole shows thorough knowledge of Gothic feeling, and is a fine design, a little deficient in breadth and power.

Messrs. Dunn & Hansom send a very original and clever design, differing very much from all the rest. They alone put the sanctuary at the east end of the site, preferring ritualistic practice, we presume, to practical considerations; and they have concocted a very clever and unusual ground-plan, with a five-apse or *chevet* arrangement,—at least, something approaching a *chevet*,—at the east end, so contrived and treated as to look as if arising naturally out of the shape of the site, the apses or chapels being external features at the points where they can be seen, internal only where their effect would be lost from outside. The plan is five-aisled, but, in reality, is very near a square in its main proportions, and has a central tower and lantern carried on crossing piers, for the centre portion is really a transept. The designers appear to lose a certain amount of floor-space area, however, for practical accommodation, and the *chevet* arrangement is partially reflected at the west end, where one of these quarter apses at the angle,—an exact repetition of the one in the corresponding position at the opposite end of the church,—is made to do duty as a baptistery; certainly not a happy idea either ritualistically or architecturally. The organ is placed at one side of the crossing or transept, in a very central and open position. The perspective views of exterior and interior, in pencil, and rather slightly drawn, are very good, and show some admirable bits of effect, and the octagon lantern to the tower is charming. The design has some practical defects, but it is one of the most original and pleasing of the whole in many ways, and is highly creditable to its authors.

Since the above comments were written, the decision of Mr. Fergusson, who acted as architectural adviser in the competition, has been communicated to us. It runs as follows:—

"Every one that examines, even in the most cursory manner, the nine sets of drawings sent in competition for the new church in Spanish-place, must, I think, be struck with admiration at the high standard of average excellence which has been attained in their production. There is not one among them which, if carried into execution, would not result in the production of an appropriate and dignified parish church, suitable to the locality; and all display an amount of thought applied to the subject, and a familiarity in designing in the style indicated, which are most creditable to their authors; nor is there one of them which does not exhibit some feature of excellence of design, in some part, which is particularly fascinating, and which if possible every one would like to see carried into execution.

The very great amount of thought, combined with the skill and ability displayed in all the nine, renders the office of selecting one for execution a task of considerable difficulty and anxiety; but after the most earnest attention I can bestow on the subject, I have no hesitation in selecting that by Messrs. Goldie, Child, & Goldie as the one that fulfils the purposes for which the competition was instituted more completely than any of the others. With certain changes and modifications which can easily be introduced before the working drawings are completed, the result I feel convinced will be the production of a church with which all concerned in its erection will have every reason to be perfectly satisfied."

Cardinal Manning has approved the decision, which we presume will be acted upon. Without seeing the whole collection in quite so *couleur-de-rose* a light as Mr. Fergusson does, who must be more easily satisfied about Gothic, as shown in some of the designs, than we should be, we quite agree that there is a high and very equal standard of merit in the majority of them, and that the choice cannot be regarded as otherwise than a reasonable one, though there may be individual differences of opinion about it.

CROOKS AND CROZIERS.

BY FREDERICK GEORGE LEE, D.D., F.S.A.

The Crook or Pastoral Staff.

THIS is the official staff of office of an archbishop, bishop, abbot, or abbess, formerly bestowed at consecration* or benediction, and is commonly formed on the model of a curved shepherd's crook,—the prelate or abbot being regarded as the shepherd of his diocese or fold. Anciently the pastoral staff was termed (1) *Baculus pastoralis*, (2) *ferula*, (3) *pedum*, (4) *cambucca*, or (5) *cambuta*, and (6) *baculus episcopalis*.

So early as the sixth century St. Isidore of Seville, in his treatise on "The Ecclesiastical Offices," wrote thus,—"A staff is bestowed on a bishop at the time of his consecration, that he may, as this symbol suggests, both govern and correct the flock committed to his charge, and likewise support the infirmities of the weak." St. Cæsarius of Arles, who flourished A.D. 502, is said to have used the pastoral staff on all public official occasions; and his

* "Episcopo, dum consecratur, datur Baculus, ut ejus judicio sibi subditam plebem vel regat, vel corrigat, vel infirmitates infirmorum sustineat."—*Isidorus Hispalensis De Divin. Offic.*, cap 5.

Fig. 1.

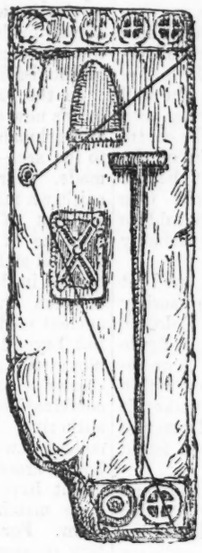


Fig. 2.

Fig. 3.

"was of wood,* in shape like unto the crook of a mere shepherd." At least, so Hittorpius, as quoted by Henry Wharton, the antiquary, maintains. St. Fillan's, still existing, is of the same type.† For fourteen centuries or more the staff has usually taken this form; though originally, being, in the earlier periods, borrowed possibly from the rod of Moses, the official staff of the Hebrew judges, or, it may have been, from the sceptre of the king,—the regal symbol of authority to rule and to correct,—it was probably a mere hand or walking-staff, with a knob or small ball at its top, and a *ferula* at its point. Such is actually the traditional staff of St. Peter, which is said to be preserved at Naples. Occasionally the head of the staff was subsequently shaped like the Greek letter Tau, making what is known as the "Tau-cross." An example of this shape in carved ivory, with rude heads of animals, and interlaced work at the ends of the arms of the cross, and with a figure of our Lord seated giving the blessing, may be seen at Limburg.‡ Another still remains in the old Benedictine Abbey of Deutz, traditionally believed to have been that of St. Herbert, archbishop of Cologne. It is of ivory, the ornamentation being Byzantine work of the tenth century. A crucifixion with Mary and John, with the sun and moon above, are found on one side of the head, and our Lord seated in glory on the other. At the end of the arms of the "Tau Cross" are conventional lions' heads, with interwoven bands and archaic acanthus flowers. An inscription runs thus:—"*Reliquiæ Sanctæ Marie et Sancti Christopheri.*"§ A friend informs me that at Peterborough, Durham, and St. Paul's, London,‖ the old inventories contained what were probably descriptions of this ancient kind of pastoral staff.

Another example of the Tau cross (showing its use in Scotland in early times) may still be seen represented in the hand of a bishop in a sculptured figure towards the base and near the entrance to the remarkable round tower of the cathedral church of Brechin (see fig. 1). This entrance, short and narrow, under a bold semicircular arch, consists of four large constructural carved stones, edged with a rude pellet ornament, the one at the head with a Byzantine crucifix (the figure apparently draped and crowned), carved at its apex, and the two perpendicular stones with projecting carvings of two prelates, one on either side. That on the right side, wearing a kind of tippet or surplice, holds a short pastoral crook; that on the left, vested in eucharistic vestments, bears the Tau cross-headed staff (see illustration). On either side of the lower horizontal stone, which is quite plain, though similarly edged with a pellet ornament, are representations of two wolves, *couchant*, facing each other, much weather-worn. Some specimens of similar Tau-cross pastoral staves are also found represented in old sculptured tympanums in the South of Ireland; while examples still exist in well-worn sculptures at Rockcliffe, Cumberland; on the churchyard cross of Great Bedwin, Wiltshire; at Treewoof, Cornwall; and at Landewednack, in the same county. There were anciently a Tau-cross staff and Book of the Gospels visible on a grave-stone in the choir of St. Anthoninus's Church, Manaccan, as the late Rev. Dr. George Oliver, of Exeter, who described and secured a sketch of it,* put on record; but it is now lost. That valuable sketch is reproduced in fig. 2.

Several interesting examples of pastoral staves of the Mediæval period are preserved in England. That of William of Wykeham at New College, Oxford, has often been described and illustrated. The pastoral staff of Bishop Fox, of Corpus Christi College, Oxford, of scarcely less interest, both from an antiquarian and archæological standing-point, is less known, but is also of singular beauty and merit, both in design and execution. Here the best art in detail is evident throughout, while the general effect is excellent. The accompanying sketch (fig. 3) gives an idea of its general character.

In York Minster the silver pastoral staff of Dr. James Smith, born at Winchester, Roman Catholic Bishop of Callipolis *in partibus infidelium*, is still preserved. He was vicar apostolic of the northern district from 1688 to 1712, with a stipend of 1,000*l.* a year paid out of the royal exchequer. The staff in question, 7 ft. in length, with figures of the Blessed Virgin and Child in the head, with the arms of the donor, Queen Catherine of Braganza, and with those of the bishop himself on shields, evidently of Spanish workmanship, was seized by force at one of the bishop's episcopal visitations by Thomas Osborne, Earl of Danby, who subsequently, *i.e.*, in 1694, became Duke of Leeds, who presented the staff to Thomas Lamplough, archbishop of York, a most reverend receiver of stolen goods.*

There is an oak pastoral staff, from Mr. Butterfield's design,—somewhat rude and clumsy, however, attached to the stall of the Bishop of Oxford in the private chapel of Cuddesdon College, while seventeen of the Anglican bishops† and four of those of the Protestant Episcopal Church in Scotland ‡ are said to have either procured or accepted similar staves of office, all of different merit as regards design and execution, but some of considerable intrinsic value and of great artistic beauty. The Colonial bishops, in many cases, have likewise adopted the Pastoral staff. That of the Bishop of Dorchester, O.C.R., from an ancient model of great simplicity and beauty, is of ebony and silver, with the arms of the see.

A modern staff, for Bishop Tozer, designed by Mr. R J. Withers, deserves a detailed description and high commendation. It is constructed of ebony, ivory, and silver,—its height being 5 ft. 9 in. The crook is of ivory, being an irregular octagon in section about 10 in. long by 5½ in. wide, gradually diminishing in size from the commencement and ending on a flowing leaf, in the eye of which is a six-foiled conventional flower of hammered silver, with two faces and a carbuncle in each. On the faces of the crook are twenty-seven other carbuncles, while along its crest stiff-leaved foliage of beaten silver is placed. The whole of the silver, either hammered or engraved, is parcel gilt.

There are many ancient specimens of different types to be seen in our own public museums and exhibitions. The examples at the British Museum, ranging from the tenth to the sixteenth century, would enable a student of Church archæology to learn their peculiar antiquarian characteristics. The private collection of Lord Zouch of Haryngworth likewise contains some exceedingly beautiful examples; while there are specimens (some, however, mere detached heads and fragments) of singular interest, both in the South Kensington Museum,§ in the Museum of the Royal Irish Society in Dublin, and among the collections of the Society of Antiquaries of Scotland in Edinburgh.

The destruction of such *ornamenta* during the Tudor changes was so vast and disastrous, that the examples preserved are all the more valuable. Abroad specimens are numerous, but those of early work, and singular merit, are generally known to archæologists, while many of the most interesting have been described and represented.

In the treasury of Cologne Cathedral, a pastoral staff of the fifteenth century, not unlike, both in general design and detail, those of Fox and Wykeham at Oxford, is preserved. In its head it has a figure of a prelate in mitre and cope kneeling before the Virgin

* "Ligneus erat S. Burchardi baculus, etsi Wirceburgensis ecclesia longe esset opulentissima. Unde commendandæ ejus modestiæ ansam arripuit Vitæ S. Burchardi Scriptor."—*De Baculo*, P. A. Krazer. 1736.

† For three illustrations of St. Fillan's pastoral staff, with a crook, see "Scotland in Early Christian Times," by Joseph Anderson.

‡ See "Glossary of Liturgical and Ecclesiastical Terms," by F. G. Lee, p. 272, where it is depicted. London: 1877.

§ On an ancient specimen referred to by the Rev. Dr. Canon Rock, the following expressive sentence was engraved:—"*Dum iratus fueris, misericordiæ recordaberis*," with the words "*Homo*" and "*Parce*" as completing and giving point to the injunction.

‖ "Item, baculus ejusdem cum cambuca cornea, continens interius vineam circumplectentem leonem de cupro deaurato."—"Inventory of St. Paul's," transcribed by William Dugdale, and printed in his "*Monasticum Anglicanum*," p. 313.

* Dr. George Oliver, of Exeter, believed that the cap of office, above the staff, like similar representations upon certain German and Flemish tombstones, was intended to represent some early form of the mitre. Dr. Canon Rock was of the same opinion.

* The "Episcopal Succession," &c. By W. Maziere Brady. Vol. iii., p. 247. 1877.

† These staves are not now given to the bishops by the officiating metropolitan, who consecrates them during the ceremony of consecration, for this expressive rite was abolished under the Tudors; but the staves, when subscribed for and procured, are subsequently presented by some distinguished layman. The Earl of Cork, Master of the Queen's Buckhounds, recently presented a staff to Lord Arthur Hervey, Bishop of Bath and Wells. The late Bishop Christopher Wordsworth, of Lincoln, wrote thus twenty-two years ago:—"Might not they [the Tudor Reformers] have left the episcopal mitre? and especially the episcopal crozier, that beautiful, affecting, and expressive symbol of the love and care of the faithful shepherd in feeding and tending the flock of Christ?"—"Journal of a Tour in Italy." By Christopher Wordsworth, D.D. In two volumes, p. 52. London: 1863.

‡ In a portrait of Dr. H. W. Jermyn, Bishop of Brechin, in the Royal Academy this year, he is represented in the mere domestic dress of a prelate, and with the staff *in his right hand*. This, of course, is an error, for the staff should be always borne in the *left hand*, so that the *right hand* may be free with which to give the blessing. Moreover, a staff implies a corresponding mitre and cope, and should not be assumed with the ordinary domestic dress of rochet, mantle (or chimera), scarf, and bands.

§ Some of these have been illustrated in the official publications, treatises, and handbooks.

and Child; and is especially rich in its intricate but beautiful tabernacle-work and crocketing running along the whole of the head of the crook.

A Flamboyant staff of silver, with *vexillum* attached, is preserved at St. Martin's Church in the same city, with figures of St. Martin and the beggar in its head.

The head of a pastoral staff of Flamboyant work remains in the Church of St. Ursula, Cologne, containing a seated figure of that saint under a canopy in its crook. The design is severe. The extreme end of the curved head and the staff itself have been lost.

As regards effigies of post-Reformation prelates, that of Miles Magrath, appointed archbishop in 1570, in Cashel Cathedral, who died in December, 1622, is represented mitred, with his pastoral staff in his left hand.* The same is the case with Archbishop Samuel Harsnett of York, who died May 25, 1631, and was buried at Hull. On a brass the staff is represented in his left hand, while he holds a Bible in his right. At the funeral obsequies of Bishop Brian Duppa of Winchester, in April, 1662, William Ryley, Lancaster Herald, carried the bishop's crook or pastoral staff;† and the same was the case at Archbishop Juxon's funeral, July 9, 1663, when Elias Ashmole bore the archiepiscopal crook, *not* the crozier.

In Lichfield Cathedral, Bishop John Hacket, who died October 28, 1670, is represented with his crook in his left hand; Robert Creighton, of Wells, who died November 21, 1672, on his monument in Wells Cathedral has his mitre and pastoral staff; Richard Sterne, Archbishop of York, who died July 18, 1683, John Dolben, who succeeded him, was Primate of England, dying April 11, 1686; as well as Thomas Lamplugh, who died May 5, 1691, and John Sharpe, February 2, 171$\frac{3}{4}$, each and all of York, on their monuments are represented as having mitres on their heads, and pastoral staves either in their hands or placed at length on their left shoulders. Archbishop Gilbert Sheldon of Canterbury, a great benefactor to Oxford, who died in 1677, and was buried at Croydon, on his monument likewise holds his pastoral staff; and in more recent times similar traditions have been observed and followed. There is scarcely an English cathedral in which such may not be discovered.

I now pass on to the second part of my subject, briefly treated; but mainly by dealing with facts.

The Crozier.

This is termed, in old Inventories, "Warden's Accounts and Church Ledgers," the "crook-staff," "crosstave," "croce," "gang-staff," "rogacion-stave," and "crokestaff." In some cases these terms described the ordinary processional cross of the church or abbey.‡ But in chief cathedral and metropolitan churches they often had reference to the cross of jurisdiction on solemn and special occasions borne before the archbishop (or bishop, as in the case of Meath, in Ireland) as a symbol of jurisdiction, and in addition to the pastoral staff which he himself carried in his left hand. The error of confusing the pastoral or shepherd's staff and crook with the crozier, which is a cross upon a staff, and not a crook at all, is constantly made.§ But it *is* an error, and not less so, because uninformed persons, and mere superficial though dogmatic writers adopt and perpetuate it. In some cases, as at Lisbon, Arles, Ravenna, Cologne, Lyons, and Venice, a cross with double transverse arms was used,—technically, a "patriarchal cross,"‖ —either by ancient custom or special grant from lawful authority.

Abroad such *ornamenta ecclesiastica* are very numerous, though old examples are rare. There is, for instance, an archiepiscopal crozier of silver-gilt in the Treasury of Cologne Cathedral of singular beauty and great simplicity. The staff is of a remarkable artistic character, being both of graven and of beaten work. In the centre of the cross itself is a representation of the crucifixion with Mary and John, and at the end of the four arms the evangelistic symbols. One of the inscriptions in Leonine verses is said to be of the date A.D. 1178, but this is probably the copy of an older original.

There is also another fine crozier used at archiepiscopal visitations, &c., in the sacristy of the Church of the Assumption at Cologne. It is of sixteenth-century work, with a figure of our Lord on the Cross, which has fleur-de-lys ends and symbols of the Evangelists within circles on quatrefoils. Tradition makes it the original archiepiscopal cross of Herman of Cologne. This, however, on inquiry is found to be doubtful.

The processional crucifix at St. Columba's Church in that city, very elaborately jewelled and richly crocketed with beaten work, is likewise of great artistic merit. Of the ordinary type in design, the general effect is much heightened and enhanced by its rich and appropriate details. This also, as I have been credibly informed, is reputed to be an archiepiscopal crozier.

At the funeral of Archbishop Lindsay of Armagh, his Grace's steward bore a rod of office before the corpse, the pastoral staff, signifying character and pastoral dignity, was carried by another official, the mitre by a third, and the crozier, indicating jurisdiction and authority, by a fourth,* thus distinctly marking off the latter from the crook. An exactly similar observance was followed at the burial of Archbishop Frewen of York, in 1664, when the pastoral staff, as well as the cross-staff or crozier was borne, as also a silver mitre, by three appointed officers before the corpse.† At the funeral of Bishop Matthew Wren, of Ely, on May 11th, 1667, at Pembroke College, Cambridge, a pastoral staff of silver, with the crook gilded, was borne in the procession to the vault, together with a silver-gilt mitre, carried on a purple velvet cushion, during the burial obsequies. The same was the case at Bishop John Cosin's interment, at Bishop's Auckland, in May, 1671, when, in accordance with a custom universally restored at the restoration of King Charles II., a mitre and pastoral staff, as well as a banner and crozier,‡ "a cross-staff between banner-rolls" was carried at the head of the coffin, covered with "a rich pall of purple velvet." The cross-staff was borne in addition to the crook, "Cosin being chief of the palatinate, and having judgment of life or death." The pastoral staff and mitre were likewise carried before the corpse of Sir Jonathan Trelawney, bart., some time bishop of Winchester, one of the celebrated "seven bishops" of James II.'s reign, while mitres and staves of gilt were placed over the tombs of Bishops Morley (1684) and Mews (1706), in Winchester Cathedral, and still remain. At the same time it must be admitted that, except at certain coronations, mitres and pastoral staves have been seldom or never used by English bishops. The archiepiscopal crozier, since the time of William Warham, has scarcely ever been seen. Its use was dropped by Cranmer. Matthew Parker used only a walking-staff, crowned with a knob.

At funeral ceremonials, — where ancient customs and traditions are observed,—the pastoral staff, occasionally draped in black silk or crape, should not be broken, as the staff of the kings of arms is broken; but at the close of the ceremony, *sede vacante*, should be handed over to the clerical representative of the Episcopal chapter (exercising jurisdiction) who carries it away with its crook downwards,*—abroad to the Vicar Capitular,—to be used at the consecration, or formal installation and enthronisation, of the succeeding bishop.

In the case of the Archbishop of Canterbury's new cross or crozier,—a beautiful piece of workmanship enough, and a munificent gift to the see,—two obvious mistakes have been made. Firstly, the so-called "crozier" is neither a metropolitan's crozier, such as former Bishops of Rochester† carried before the Primate of all England; nor is it such a pastoral staff as former archbishops themselves carried in their left hands. It is a compromise between the two, — a pastoral staff, after ancient models from the *ferula* up to the knob, but beyond that, wanting in a crook, and surmounted instead by a cross, too small for the crozier of an archbishop, and making a novel combination, altogether without precedent or authority. Secondly, the amount of money collected was quite sufficient to have provided both a cross and a pastoral staff, each of which might have been readily enough designed to have matched and corresponded with each other. For the difficulty, as Report says, was how to spend all the money collected on a single *instrumentum*.

THE EXTENSION OF INSTRUCTION IN DRAWING TO CHILDREN IN ELEMENTARY SCHOOLS.

THE Education Code for 1885 was some time since published and laid upon the table of the House of Commons. The subject came before the House on Tuesday last, when Mr. Stanhope introduced the Education Estimates. One of the newest of the charges in these Estimates is that providing for the cost of the introduction of drawing amongst the "class subjects" taught in elementary schools. The "compulsory subjects," as is well known, are the three Rs; then there are subjects examinations in which,—two or three at most,—may be taken somewhat optionally by classes *en masse*. These are the "class subjects." Besides these, there are "specific subjects," which are more or less limited to the elder children in elementary schools, and the examinations are taken by individual scholars. The courses of instruction in "class subjects" are arranged in seven standards; and the course of drawing for elementary school children for the first time in the history of national education has been accordingly treated. Two broad divisions are developed in the seven standards of drawing, viz., freehand drawing and geometrical drawing. The standards are as follow:—

Standard 1.—Drawing freehand, and with the ruler, of lines, angles, parallels, and the simplest right-lined forms, such as some of those given in Dyce's Drawing-book. (To be drawn on slates.)

Standard 2.—The same, on paper.

Standard 3.—Freehand drawing of regular forms and curved figures from the flat. Simple geometrical figures, with rulers.

Standard 4.—Freehand drawing, from the flat and from simple rectangular and circular models. Drawing to scale. Geometrical figures with instruments.

Standard 5.—The same as 4, with the addition of easy common objects. Plans and elevations of plane figures and rectangular solids in simple positions. Simple scales.

N.B. In order to interest the children, it will be advisable to teach them to draw as early as possible from actual objects, such as the doors and windows, furniture, and apparatus of the schoolroom.

Standard 6.—The same as the 5th, but of

* "History of Ireland." By Ware. Folio, vol. i., p. 485. Dublin and London. 1764.

† "Certificates concerning Funerals," in Library of College of Arms. I., viii., 85.

‡ According to the Old Sarum rite, the processional cross, used during Lent at the Sunday procession and at bidding of bedes before High Mass, was made of wood and painted red.

§ "A crozier is a pastoral staff, two names for the same thing."—*Church Times*, April 10, 1885.

‖ A foreign Catholic Archæologist, the Count Conti, informed me in 1877 that, anciently (as represented in an old picture), a cross with double arms stood immediately behind the altar of the ancient and most interesting Church of Torcello, which once possessed certain metropolitical rights.

* "History of St. Patrick's Cathedral," by Mason, p. 215, footnote. Quarto. Dublin: 1820.

† MS. notes by Sir C. G. Young, Knt., of the Heralds' College, Garter King of Arms, marked "Precedents."

‡ The Bishops of Durham were formerly Counts Palatine, decreeing, by their Courts (in which the King's judges sat by writ from the Bishop), legal decisions, even regarding life and death; possessing, consequently, an almost unique jurisdiction, symbolised by the crozier.

* "Notes regarding Funeral Observances" (in which there are references to French, Flemish, Italian, and Spanish traditions and customs), by Sir George Nayler, Knt. (p. 17). (Tract without a date.)

† The Bishops of Rochester from time immemorial have been *ex officio* provincial *crucifiers* of the Province of Canterbury, and, on very important occasions, have borne the cross or crozier of the metropolitan before the Primate of All England.

greater difficulty ; and for geometrical drawing, the same as the 5th, with sections.

Standard 7.—Drawing any common objects and casts of ornament in light and shade ; and for geometrical drawing, the same as the 6th, but with circular solids and sections.

Up to the present time that part of the country's system of education which applies to instruction in drawing and its ramifications, leading into painting, modelling, composition, and design, have been wholly under the supervision of the Science and Art Department. Payments on results of examinations of individuals are made by this Department to elementary schools and the special classes of schools of science and art organised throughout the country by local committees ; but, under the new order, the payments on results of drawing in elementary schools will almost entirely disappear from the estimates of the Science and Art Department, to be merged for the most part into those of the Education Department.

The change effected should eventually tend to greatly extend instruction in drawing in elementary schools, though the limit of all-results grant (17s. 6d.) per child may at first create some obstruction to this extension. Steps, however, have been taken to mitigate this obstruction, and the limitation of 17s. 6d. is not to be allowed to press too hardly upon any schools where the amount of grant per child reaches the maximum, and this without payment for drawing results. Indeed, for the next year, schools have the option of earning grants, either, as at present, from the Science and Art Department, or from the Whitehall Department. In time, perhaps, the elementary drawing instruction may even be expected to be still further generalised by being grouped with compulsory writing. Although the Royal Commission on Technical Education pressed for its immediate adoption, this is probably far distant, and must of course, be now dependent upon the progress which may be made with drawing as a "class subject."

Under the Science and Art Department there have been two grades of instruction in drawing for elementary schools,—namely, the first and second grade. The first grade may become extinct as the adoption of elementary drawing as a "class" subject proceeds ; but the second grade, which includes a wider range of subjects perhaps than the seven new standards of drawing, and exacts higher degree of efficiency, will henceforth be the lower, as the third grade is the higher level of attainment which students at the special art classes and schools of art are required to reach in order that payments on results may be made in aid of these institutions.

Instruction in drawing in elementary schools was first encouraged by Government grants in 1853. During that year some 6,000 children, at about eighty national and other elementary schools, were receiving lessons in drawing. Thirty years later, 767,194 children were learning to draw at 4,500 elementary schools, and 511,300 were individually examined in one year. The importance of drawing, as a branch of general education, had all this time been growing in the minds of educationalists. Seeing, however, that barely 19 per cent. of the aggregate number of children in elementary schools were learning to draw, and that within the last two or three years there had been a falling off even in this low rate of per-centage, it was clear that something more than the system fostered under the Science and Art department was wanted. Accordingly it fell to the lot of the Royal Commission upon Technical Education to collect and weigh such facts as those above stated, and the result was that the Royal Commissioners gave the position of honour in the recommendations which concluded their report to the following :—"That rudimentary drawing be incorporated with writing as a single elementary subject, and that instruction in elementary drawing be continued throughout the standards."

In the direction of this recommendation, the transfer of the encouragement of instruction in elementary school drawing from the Science and Art Department to the Education Department has, therefore, been put forward for Parliamentary sanction. The Royal Commissioners had recommended (but without much show of knowledge as to the working of Board schools and inspectors) that the Inspectors of the Education Department, Whitehall, should be responsible for the instruction in drawing. This, however, as any one having a most casual knowledge of schools and their management must know, was a futile and impracticable recommendation. Accordingly, as is understood, the actual appraisement of the quality of drawing done in elementary schools by children will not be transferred to Her Majesty's overworked Inspectors of Schools, and the machinery which has hitherto been used for gauging the merits will continue to be employed ; in fact, the Science and Art Department will retain the exercise of a function it has pre-eminently qualified itself to regulate, namely, that of an examining body.

It would appear that in many cases, where the 17s. 6d. limit above referred to does not operate stringently, the new conditions will render payments on results of instruction in drawing rather more liberal in amount and character, and at the same time more dependent upon continuous work than heretofore. As a rule, the elementary schools, in preparing their children for the drawing examinations, have, as far as they could, minimised the period of instruction and preparation. The virtue of the teaching has been spasmodic rather than normal, and in this way the work really done was not of such lasting value as it deserved to be. Children were instructed individually, and not, as will be the case in the future, by schools. The new order of things recognises the spirit of Adam Smith's opinion, that "there is scarce a common trade which does not afford some opportunities of applying to it the principles of geometry and mechanics, and which would not, therefore, gradually exercise and improve the common people in those principles the necessary introduction to the most sublime as well as the most useful sciences." And no such opportunity occurs for a practical exposition of this elementary principle, which may be so wide-reaching in its effect as that presented in the arrangements for teaching the millions of children in our Board and National schools.

ETCHINGS OF OLD LONDON.

WE have deferred for an unconscionable time doing justice to the fine portfolio of etchings published by Mr. Ernest George under this title,* and which form a collection interesting both archæologically and artistically ; not indeed in equal degree, for we hold the artistic interest of such work as of a higher nature than the archæological. The record of the facts of an old building, historically, may be given as well with inferior artistic means and in a more commonplace manner ; indeed, there are various methods of conveying it more accurately than etching can generally accomplish. But etching lends itself peculiarly well to the task of giving the poetry and picturesqueness of these ancient structures. It tells us not merely what was the construction and the detail of this or that old building,—sometimes it may not give us these facts at all clearly,—but it represents what was the mental value of the object to our associations and our sense of artistic effect and expression.

The author remarks in his preface that it was not his aim to give "views" of London, or to set forth its public or leading buildings, but to furnish a few examples of the old houses that remain, telling how the street or river-side appeared in former days. "Those who see the overhanging stories of Staple Inn, Holborn, or the picturesquely-broken line of buildings in Wych-street (even while we write being pulled down), are apt to speak of these as being 'quite Continental.' It should be remembered that this mode of building was English as truly as it was French or German ; but in England we have been busier than our neighbours in restoring or destroying the works of our forefathers." Perhaps it might be added that we have attained to a clearer perception, or are attaining thereunto, as to the importance of substantial and sanitary building in towns. But the argument is rather beside the mark, after all. We, at all events, do not take up a collection of etchings of this kind so much for the sake of seeing what has passed away, or what is soon to perish, as to enjoy the poetry of light and shade to which many of these buildings lend themselves much better, certainly, than most modern and more utilitarian structures : a poetry which no doubt is heightened by the sense of old associations which clings around them, and blends itself, consciously or unconsciously, with the pleasure derivable from the artistic balance and suggestiveness of the picture.

The author complains that since he planned the idea, some years ago, of a collection of memorial sketches of Old London, he has in that time seen about one-third of his twenty subjects destroyed. This is not the case, at any rate, with the subject of the etching of which we have given in this number as good a facsimile as another method can give of etching,—"London Bridge" ; although it was in some danger of being æsthetically destroyed some few years ago. The bridge foreshortened, with the Monument and St. Magnus's Tower in the distance, makes a very fine composition, but we do not think either the process of etching or the author's style is quite so successful in giving the really fine elements of a structure like London Bridge as it is with more ancient and what are usually called picturesque structures. The great sweep of the arches, and their width, are not conveyed in this view, partly perhaps because there is not so much change of tone towards the middle distance as a water-colour medium, for instance, would enable the artist to command. "Old Battersea Bridge," on the other hand, is a subject after the etcher's own heart, and is treated with great force and effect in a very powerful etching. "Putney Bridge" is not included in the list of etchings, though the author, of course, appreciates what may be called its "etchability," and observes that passing either of these two bridges, "it is always some satisfaction to find these wooden relics of the past still extant." We presume Mr. George is not a boating-man, and goes over these dear old bridges, and not under them. If he did, he would realise the fact that they are not only highly inconvenient in blocking the waterway, but that at certain stages of a strong tide they are not a little dangerous, and ought to be cleared away as soon as possible. Nor is it the case that Putney Bridge is to be "supplanted by an iron rival" ; the new bridge is a very fine granite one, with no iron about it except what is being temporarily used as centering.

Among the other etchings one of the most picturesque and effective is that of "Paul Pindar's House" in Bishopsgate-street,—a bit of poetry in street front building such as modern Building Acts put effectually out of our reach. Here, however, it is the same as with the timber bridges ; the style of house which looks so picturesque is not one to be encouraged, on practical grounds, in a crowded city ; and it behoves the modern architect to think whether he cannot be poetic in more stable and sanitary materials, though in a different kind of manner, perhaps. "Wych Street," again, makes a very effective etching, but it suggests the sanitary reformer at once ; indeed, the etching rather, we think, exaggerates its former dilapidated appearance. There is a stage in the history of streets when it is an obvious duty that they should be etched,—and then taken down. The "Harbour-Master" Inn at Limehouse is still more picturesque, and does not affect one's sanitary conscience so much, since it has the river breezes to purify it (if breezes from a sewage-laden river can have this salutary effect), and is not closely faced by other buildings of a similar description. The fat-sided barges lolling lazily on the water are drawn with a

* "Etchings of Old London." By Ernest George, with descriptive letter-press by the author. London : The Fine Art Society. 1884.

loving hand. "Crown Court, Pall Mall," is one of the close corners of the picturesque, and a dirty old hole it is, occasionally but unwillingly used as a short cut; but it looks well in an etching. Now that we have so good a record of it from Mr. George's needle, let that be pulled down too, and daylight and fresh air be let in. It has been etched: away with it. "Bartholomew Close," looking "full of dead men's bones and of all uncleanness," is another effective view, and shows pathetically also the strange and enduring persistency of the London tree, which will not "flourish" exactly, but retain a sort of patient existence, amid the most uncongenial surroundings. "St. John's Gate, Clerkenwell," we regard with other eyes, and share the author's wish that it may not follow the fate of Temple Bar. "Mill Bank, Westminster," is one of the most effective of all as a picture, with the water and wharf and posts, and the boats with their black reflections, in the foreground; and the artist has got a very fine demi-tint effect over the towers of the Houses of Parliament in the middle distance. Another admirable water-side subject is "Shadwell"; and this again we enjoy without wishing it swept away. Habitations, it will be observed, as they approach the water side, in any neighbourhood where there is a depot or a resort of shipping, take more and more the character of ships, in their shapes and construction; and things look in place there which we should condemn in the streets of a crowded city. "Oxford Market," for instance, is charming in an etching; it is quite humorous, and has a dim suggestion about it of Indians and wigwams; but we cannot regret its removal.

To the antiquary, of course, our expressions will appear those of the Philistine. We cannot help that. There is a time in the life of old buildings when they sink into second childhood, and should be gently put out of the way and decently interred, not kept alive like so many struldbrugs, clinging aimlessly to an existence in which they are no longer of any use. But we would certainly wish Mr. Ernest George to make etchings of them first, and we cordially appreciate those he has already made.

NOTES.

THE vote for carrying out Mr. Pearson's Westminster Hall scheme, or at least the vote for the funds necessary for it, was carried on Wednesday night by a larger majority than we had expected. That it would be carried we had very little doubt, having regard to the Parliamentary influence brought to bear in favour of it, and the widespread misapprehension in regard to the whole meaning of architecture, and the confusion of mind between that subject and archæology which exists at the present moment. We have never made it our special principle to support the side that is likely to win, and with the pretty clear expectation that the majority of the committee would succeed in getting their way, we have at least endeavoured to bring some useful truths before them and the public. Our views received, in the debate on Wednesday, independent and very able support from the strong practical sense of Mr. Leonard Courtney, whose speech was an agreeable surprise amid a great deal of perfectly irrelevant talk. Mr. Cavendish Bentinck called attention to the absurdity of placing flights of stairs projecting into the area of Westminster Hall, about which the promoters of the scheme seem to feel quite easy. We expect that when the work comes to be carried out, a good many people who are now indifferent will have their eyes opened to the fact that they have sanctioned a monument of architectural folly. To the erection of Mr. Pearson's design on grounds of mere appearance we do not so much object, though we do not think it by any means the best thing that could be done. Our objection to the scheme is because it is opposed to practical common sense, which has been the basis of all real architecture, but which seems to be considered an entirely secondary matter now.

THE opposition to the passing of the Regent's Canal and Railways Bill in the House of Lords, which numbered thirty-seven non-contents against forty-four contents, including the Prime Minister, illustrates the manner in which a rule, excellent in itself, may at times be wisely suspended. To pay interest on a public work in course of construction is, in fact, to take money out of one pocket in order to put it into another. It is a measure difficult to justify; and, in fact, only to be supported on the ground that the investing public so far insist on the payment, that they will not subscribe to important undertakings if such an arrangement is refused. How heavily this mode of payment may load an enterprise is shown in the case of the Suez Canal, of which interest during construction, including sinking-fund, has increased the capital cost by no less than 33,000*l.* per mile. On the other hand, when employment is so much needed, and when the only barrier against the opening of a busy demand for labour, for a work of acknowledged utility, is the standing order that prevents investors from making their own terms, there will probably be but little sympathy with Lords Brabourne, Selborne, Balfour of Burleigh, and Wemyss, in their economic puritanism. Lord Bramwell's remark that, if interest was to be paid out of capital, it should be plainly stated in the prospectus of an undertaking that such was the case, is more to the point; and, indeed, goes far towards a fair solution of a difficult question. It ought to be known that for every 2,130*l.* spent in the construction of the English railways a man is permanently employed, and that for every 4¼*l.* paid as interest, 4¾*l.* is paid for labour and materials, per annum. It is one thing to check over-speculation, and another to render practically impossible useful and remunerative public works.

IT seems that we are now veering round to the idea of an artistic monument to Gordon, although it was at first said that any such monument would be unsuitable. A monument to such a man ought to be of the highest class, both in importance and in genius, or it were better to let it alone. A great competition might elicit something, as it did in the case of the Wellington Monument, but we fear there can be no such luck as the discovery of another Stevens. The site of Trafalgar-square, which has been talked of, will not do. Its central position is already occupied by the Nelson Monument, and there is no place for anything worthy of the occasion where it will not appear in subordination to that unhappy erection. It is perfectly certain that Gordon himself would have neither cared for, nor even liked, the idea of a monument in this sense; and, if anything of the kind is to be done, it cannot be too grand, severe, and simple; anything pretentious would be a kind of sacrilege. St. Paul's seems to be the most suitable site; certainly better than Trafalgar-square.

THE rather risky operation of moving a tall chimney was successfully performed recently in the tannery yard of Mr. James Riley, Salem, Massachusetts. The chimney is 90 ft. high, and measures at its base 6 ft. 6 in. in diameter, that at the top being only 1 ft. 6 in. less. It weighs about 130 tons, and contains 70,000 bricks. The first part of the operation was to build a foundation, which was to form the principal part of the "carriage," out of heavy beams 9 in. by 10 in., and to place it in readiness for the chimney to rest upon when the bottom of its brick base was removed. The next work was to construct supports or braces extending up the sides a distance of 23 ft. They were erected at the back and front obliquely, and fastened at the top with iron rods, which held them in securely. The beams at the bottom were also fastened securely with iron. The outside carriage was thus formed, slanting from the side of the chimney down to the timbers which formed the rest at the bottom. As an additional support, another "carriage" was built on the inside of the outer one in a similar manner, extending up the sides of the chimney, a distance of 16 ft. The workmen then began to make an opening in the base of the chimney, through which four large beams were passed at each side, giving a support, under which thirty-four jacks were placed. The brick structure was then slowly raised, with the carriage support, giving an opportunity for securely arranging the platform and rollers on which the chimney was to be moved. A platform or staging was constructed to form the site for the new location. This staging was then made perfectly level, and the task of moving commenced. This was accomplished in the ordinary manner of moving a building on rollers, but two windlasses and a large number of rollers were employed, so as to prevent any jar. The chimney was moved slowly but surely towards its new site, where it was finally settled. The journey was but short,—only 100 ft.,—but the moving was attended with much labour and a certain amount of danger; for, had the brick tower settled 3 in., or become to that extent out of the perpendicular, an immediate collapse would probably have followed. Six men and two horses were required to do the work.

THE burning question of the treatment of old buildings has turned up again in Parliament in reference to Edinburgh Castle, about which a debate or conversation occurred in the House of Lords on Monday night, in which Lord Balfour of Burleigh, the Marquis of Lothian, Earl Wemyss, and Viscount Bury took part. It is difficult to gather what any of the speakers really want. Lord Balfour of Burleigh had heard that the Government intended to make some alterations in Edinburgh Castle, and his remarks amounted to a recommendation that they should let it alone. The Marquis of Lothian, in a more practical spirit, spoke of the unsuitability of the old Parliament House as a hospital, and the inconvenience of having a building for stores on the top of the Castle Rock, the stores having to be carried up there before distribution. This appears to be common sense, and the argument points to the desirability of forming such utilitarian structures elsewhere. The Earl of Wemyss referred to the plans made by Mr. Billings "thirty years ago" for restoring the Castle, which, he thought, would have proved a great advantage to Edinburgh, and "an ornament to the Castle." Apparently Earl Wemyss wishes to see Edinburgh Castle made a "sham antique," as certain wiseacres have made the Tower of London. If he makes inquiries he will find that "thirty years" have made considerable difference in the manner of regarding such restoration work, among people who think at all. Viscount Bury said that the only real addition contemplated was to make a small alteration in the proposed roof of the Argyll Tower, and to put that ancient structure in a safe condition; and, apparently, it is intended to remove a haystore and a guard-room, which are at present in the middle of the parade ground. The whole sum proposed to be spent was only 1,200*l.* or 1,300*l.* If we are to understand this statement as embodying the precise truth, an unnecessary fuss seems to have been made, but we can understand Scotchmen being rather jealous of any interference with Edinburgh Castle.

THE committee presided over by Lord Henniker, which was formed to conduct the opposition to the Railway Rates and Charges Bills, was last week constituted a permanent committee to watch over the interests of trade and agriculture, so far as affected by railway and canal legislation, and the rates charged by the companies. It is to be made fully representative of trade and agriculture, and to be called the Railway Rates Committee, and as it already includes many prominent M.P.s, it will be a powerful and influential body. When the railway companies decided to withdraw their Bills (the particular object for which the committee was formed being thereby accomplished), it was very uncertain whether it would not be forthwith dissolved; and it seems very probable that the result of the "terminals" case commented upon in our "Notes" of the 4th inst. had something to do with the prolonged existence of the committee. For at the

meeting at which the question was decided it was resolved that it was expedient to raise a guarantee fund to meet the costs of obtaining a final decision on the question of terminals. All this is very encouraging for the trader, who has never before had so much assistance to rely upon in those conflicts with the railway companies which are unhappily so frequent. We should not like it to be thought that we are overlooking the services rendered by the Railway and Canal Traders' Association, and other similar bodies, whose object is to assist traders generally in questions between them and the railway and canal companies, and who take every opportunity to procure needful amendments of the law. But the existence of a powerful body watching the Parliamentary tactics of the companies is an additional safeguard for the trading community, and really for the public at large. The railway companies are not easily overcome, but the surveillance (so to speak) to which they are now subject must have a beneficial effect both as regards their practice and legislation.

THE evidence given before the Parliamentary Committee on Irish Industries continues to show an alarming state of absolute waste and throwing away of national resources, which is perfectly inexplicable in these days of scientific research and unemployed capital. Professor Galloway's remarks on the Irish kelp trade are particularly instructive, as showing how nice are the turning points at which a substance becomes profitable to manufacture, or the reverse. The Irish and Scotch kelp industries were killed, or nearly so, some few years ago by the discovery of potash salts in Germany and Austria, which contained more bromine, it being understood that bromine and iodine are the two most valuable constituents that can be extracted from the kelp. The ordinary process of treating kelp is simply to to burn it, but by so doing there is a loss of about one-half of bromine and iodine in the ash; whereas, if the sea-weed was only charred instead of being burned, all this could be saved, and the tables turned on the German product. The necessity for this improvement in the process is greater, seeing that iodine fetches 14s. per pound, and that there are only 14 lb. of it in the ton of kelp. The Professor also considered that, if it paid to purchase the potash salts, such as chloride of potassium, for the manufacture of saltpetre, it would be still more advantageous to produce the saltpetre side by side with the kelp industry. Seeing how largely the potash salts are utilised, and what a great demand there is for the bromides and iodides in medicine and the arts, particularly photography, this single industry would be sufficient to give employment to the whole north-west coast of Ireland.

HITHERTO water-colour painting has received but scant recognition from the Royal Scottish Academy. Scottish artists till recently seldom used water-colour except as a ready means for sketching broad and general effects, and when so using it have treated it more after the manner of oil painting,—by an admixture of body colour,—than by the more legitimate method of washings of transparent colour, by which means only the true beauty and brilliancy of the medium are brought out. They seem also to have looked with an air of disdain at the delicacy of finish and careful manipulation which this manner of painting demands. The water-colour drawings in the annual exhibitions of Royal Scottish Academy have invariably been few in number, and of these the most noteworthy examples have come from the south of the Tweed. Artists are usually men of liberal, often radical, proclivities, but when associated into an Academy they are apt to become wonderfully conservative; but they are amenable to outside influences, and it seems that such have been brought to bear upon the Scottish Academy so as to induce that body to sanction a Summer Exhibition in the Galleries on the Mound devoted to paintings in water-colour, and drawings in black and white. The Exhibition, which was opened on Saturday, the 11th inst., contains many beautiful productions, and will compare favourably with similar exhibitions in the metropolis.

IN works produced by the pen, pencil, crayon, or hair-pencil, we often find a fitting preparation for more ambitious attempts in oil; as the first impressions of the artist, they possess a freshness and charm which we do not find in his more finished and elaborated productions. He is then in close contact with nature uninfluenced by other sources of inspiration, and he frequently exhibits, with frankness, the means by which he arrives at results. A remarkable evidence of this proclivity appears in a very pretty water-colour drawing by Sir Noel Paton which occupies the place of honour in the great room. The subject is Inveruglas, a Highland dell down which meanders a brook overshadowed by moss-grown trees, one of those moist nooks full of luxuriant verdure, lovely to look upon, but dangerous to linger in. The artist has rendered the mosses which clothe the trunks of the trees with the utmost minuteness, not only in the foreground, where they could easily be deciphered by the naked eye, but also in the middle distance as they recede from the sphere of vision; and even in the distance the leaves are minutely detailed, although not so positive in colour as those in the foreground. It is very pretty work, but it is not true to nature, as it appears to the ordinary observer, nor yet is there any attempt to idealise the scene. It is nature seen through an artificial medium, and this Sir Noel Paton confesses by painting an opera-glass lying upon a grassy bank in the foreground with a pencil beside it. This drawing appears to have been utilised by Sir Noel Paton in his highly-elaborated fairy scenes, where such painting is allowable, as it may be readily conceded that the elfin folk are possessed of vision differing from that of ordinary mortals.

THE blank return, for the first half-year of 1885, to the original shareholders of the Manchester, Sheffield, and Lincolnshire Railway, is a fact of evil omen for the railway dividends about to be declared. No dividend is paid on the ordinary stock of this line, which amounts to about 5,400,000*l.*, and the payments on the guaranteed, preferential, and debenture stock, and on loans, are only kept up by drawing on the reserve fund. The Manchester, Sheffield, and Lincolnshire Railway has cost upwards of 65,000*l.* per mile. The June dividend has generally been less than that for December, and in 1880 it was *nil*. In 1878 only 25 per cent. of its receipts were from passenger traffic, while 20 per cent. was derived from the carriage of minerals. The gross earnings in that year were in the satisfactory proportion of 10·2 per cent. on gross capital, and as the co-efficient of working expenses was only 49·6, the net return was a little over 5 per cent. The corresponding figures for the present year are not yet published; but the fact announced bears testimony to a great falling off since the last year of which the returns have been analysed in "The Index to our Railway System." The reports of the three competing lines from London to the North will be awaited with some anxiety.

ONE of the most paying of all branches of scientific knowledge is that of entomology, which has become exceedingly general of late years, thanks to the Royal Agricultural Society as a body and Miss Ormerod individually. Those who are interested in the preservation or consumption of timber will find it to their account to cultivate their powers of observation, and to study those insects (and there are many of them) that commit havoc among our trees. The current number of *Forestry* calls attention to the damage done to the woods at Novar in Ross-shire by the pine weevil (*Hylobius abietis*), which particularly affects parcels of wood that have been cut and thrown loosely together, eating the bark and sucking the sap from the sawn bark. The beetles are usually found on ground from which a crop of old fir has been previously removed, the roots being seen to be perforated with holes caused by the working of the maggots between June and the end of autumn. Draining and burning the ground after the crop is cleared, are the most efficient remedies, followed up by fresh planting with strong two-year transplanted trees. Incidentally, it is worth mention that the ox-warble fly costs the country, and more particularly the tanning and farming interests, an annual loss, estimated at between two and seven millions sterling.

THE fitting-in of a missing link in the railway communication between London and the Isle of Wight is an undertaking of which the completion is promised within the course of the present month. At the present time the whole of the goods traffic to the island is subjected to the double expense of embarkation and disembarkation, for the water-passage of between ten and eleven miles. This cost of handling is enough to pay the expense of a long railway run. To remedy this, the Isle of Wight Marine Transit Company has been formed; and piers and other works have been constructed at Langstone and Brading harbours, between which a steamer that can carry fourteen trucks will ply backwards and forwards, making the passage in an hour and a half. The Firth of Forth is already crossed in the same way between Granton and Burntisland by a steam ferry. In all those cases where a comparatively short sea-passage is interposed in a railway run, the real difficulty that opposes the introduction of the steam ferry is to be found in the construction of harbours. The ferry boat ought to be large enough to receive a train, with as little breaking-up as possible. There was a suggestion that the *Great Eastern* should be used for the passage of the Channel, a portion of the express trains being run on board, so that a passenger could go from Paris to London without leaving the carriage. Want of harbour accommodation is understood to be the only reason why this, or some similar method, has not been applied to this important line. The Isle of Wight Transit Company will, if successful, prove a pioneer in a very useful kind of enterprise.

URGED by strong complaints as to the offensive smells emanating from the sewer ventilators or manholes, the Chiswick Local Board are making laudable efforts to introduce the most improved and effective methods to abate this nuisance, more or less incident to all drainage schemes. After having tried the insertion of baskets of charcoal into the ventilators, the erection of shafts up the sides of the houses, and the regular flushing of the sewers by the hose-pipe, all at considerable cost, and with only partial success, the Chiswick Local Board have just signed a contract with Mr. Trehearne, Hammersmith and Chiswick, for the construction of fifty flushing-wells and the providing and fixing of fifty flushing syphons, at a cost of 1,275*l.* It is stipulated that the apparatus to be used by the contractor is Doulton's patent automatic flushing syphon for keeping the main sewers and drains free from obstruction. The surveyor of the parish, Mr. Ramsden, has calculated that, by the adoption of these syphons, he will make a saving of nearly 200*l.* per annum over the plan of flushing the sewers by hand and with hose-pipe. It need scarcely be mentioned that the principle of operation of the automatic syphon is that the chamber fills slowly by water from the water-supply main, and empties suddenly automatically, the rapid periodical flow of water cleansing the sewer.

THE resolution which will be proposed at the half-yearly meeting of the Metropolitan Railway, on Tuesday next, that the two underground lines should be amalgamated, is one which is as much in the interests of the public as of the shareholders. The mutual jealousy of the chairmen of the two companies, the interminable litigation, and the complete want of harmony between the two lines, have been a public scandal and inconvenience. There can, therefore, be no question that were the Metropolitan and the District Railways to be placed under one management, the public would certainly benefit by it. It is equally

clear also that the cost of the double management, and the cessation of the ill-will between the two companies, would materially benefit the shareholders in both these lines. This movement on the part of the shareholders, succeeding, as it does, a similar one on the part of the shareholders in the Brighton line, indicates clearly enough that this hitherto long-suffering body is beginning to be aroused to look after its interests, and that henceforth the personal rule which has characterised the ways of certain railway directors will receive a wholesome check. It is certain that Sir Edward Watkin and his Board will oppose the resolution which we have mentioned, and the result of the contest between railway imperialism and railway democracy will be of general public interest.

MINEHEAD CHURCH.

THERE are still left in the country districts of England quiet and pleasant little towns, which seem to exist only for the purpose of emphasising the quotation, "The world forgetting, by the world forgot"; and Somersetshire can, in all probability, show a greater number of them than any other county. The reason of this is obvious, viz., that they are devoid of those manufacturing resources which always attract population, and have to depend upon the same agricultural employment that has served many successive generations. But Somersetshire towns and villages possess special attractions apart from their loveliness and old-world character; for they are famous for their churches, many of which are of great size and beauty, while nearly all are worth a careful examination. One of these churches, that of Minehead, is now undergoing considerable alterations and reconstruction.

Minehead is a quaint scattered little town of considerable antiquity, situated on the Bristol Channel some ten miles from the Devonshire border, and sheltered on the north-west by a high wooded hill, known as Greenaleigh, or North Head. Magnificently placed about halfway up is the Old Town, consisting of the church in question, and a group of picturesque cottages, every one of which is a study to the artist. In the open valley below is the lower town, or modern Minehead, while a third section, known as Quay Town, is occupied by the little harbour and quay, and the sailor population generally. Few churches stand so nobly as Minehead, with its grand view over the Severn sea and the Welsh coast, with, nearer home, the ranges of Exmoor and the Quantocks; and it is no wonder, therefore, that its fine Perpendicular tower is a central point in the scenery of the neighbourhood. The church, which holds about five hundred people, has a broad nave of eight bays, with a north aisle, at the end of which is a chantry chapel (used as a vestry), with its original oak roof. At the west end is a tower of three stages, having a recessed doorway with shallow mouldings. It was found to be in excellent repair, although advantage was taken by the architect to remove the wooden mullions of the west tower window, and replace them by stone tracery, in keeping with the Perpendicular east windows. The copings of the battlements have also been renewed. The most important part of the renovation was required in the outer walls of both nave and aisle which were sadly out of position. Indeed, they had only been kept together by heavy supporting buttresses of great thickness, notwithstanding which the south wall had bulged outwards considerably, while the north wall and the piers separating the nave from the aisle were at least 18 in. out of the perpendicular. With the exception of three small external buttresses at the east end, all the others have been removed, thus allowing the restoration of the south porch to its original dimensions. Internally, the northward leaning of the piers, which are octangular and perfectly plain, without any moulding, necessitated their entire rebuilding. A wooden partition formerly shut off the tower from the body of the church, and in front of this was a gallery. This latter has been taken away, allowing the fine proportions of the tower arch to be visible, and considerably increasing the comfort of the sitting space, although the actual number of seats has been somewhat curtailed. The font has also been shifted from north to south, and the organ removed from the gallery to the north aisle by the vestry. Of course, all the hideous old pews have been weeded out, and the chancel itself is now quite free, with the exception of a few choir-stalls. A new roof of pitch-pine has been added throughout, with the exception of the chantry chapel, the oak ceiling of which is untouched. The glory of Minehead Church is the oak rood-loft and screen, of very beautiful and delicate workmanship. The loft is entered by a newel staircase, lighted by a square-headed traceried window. Looking at its elaborate carving, and comparing it with the rather unusual plainness of the interior of the church, one can scarcely help fancying that it must have been an importation, probably from the Abbey of Cleeve, which is only about five miles distant. Such borrowings at the time of the Dissolution were very common, and the notion is strengthened by the fact that there still remains in the lower town a very interesting old house (now part of the tannery), but bearing traces in its fine old oak doorway and windows of an ecclesiastical origin. Although nobody seems to know its history, it is not improbable that it was a grange or country farm belonging to the priors of Cleeve, where the worthy fathers combined business with pleasure, and whence they recruited the larder of the abbey. The fine monument and recumbent effigy of Henry de Bracton, a notable lawyer of the fifteenth century, has not been in any way interfered with during the alterations; but the alabaster full-size statue of Queen Anne, which was presented to the church by Sir Joshua Bancks, a former member for Minehead in the good old days when a borough could be bought and paid for in hard cash, has been removed, and is to find its resting-place in the new Town-hall. Both in appearance and association it will befit the latter far better than it has ever done the church. The architect for the restoration of Minehead Church is Mr. St. Aubyn, whose plans have been admirably carried out by Mr. J. Langdon. Both these gentlemen are engaged on the Town-hall, which is of Tudor style, and is to cost 3,000*l*. It will be a great ornament to the little town, which is in great want of a place of assembly.

Illustrations.

CABINET, ITALIAN RENAISSANCE.

THIS sumptuous piece of decorative furniture is at present in the possession of a private owner in London, who purchased it in 1881 from the collection of Signor Arietti in Venice. The present owner knows nothing of its history.

The ground material of the work is ebony, the elaborate inlay mostly ivory, and at the centres of the panels stones of various colours are inserted. The shafts are of lapis lazuli, with gilding on the caps. The whole stands about 7 ft. or 8 ft. in height. It is in admirable preservation, and is a very fine example of work of probably the full Renaissance period in Italy.

Our illustration of the cabinet is engraved by Mr. J. D. Cooper, from a photograph taken for the purpose by Mr. Bedford Lemere.

PARISH CHURCH, SLOUGH.

THIS church was one of those so often met with built about fifty years since. It was in an imitation of the Norman style carried out in stock brickwork. The plan was a parallelogram, which at this period was the favourite form for churches.

The building has now given place to the one of which the interior is here illustrated, at least as far as the eastern part is concerned. The west end remains for the present, and forms a part of the nave of the church. It is hoped that this state of things may not be allowed to continue many years. The new part consists of one ordinary bay of the nave, transepts, and a spacious chancel, with aisles, vestry, &c. It is all carried out in red brick varied with flint and banded with bricks of smaller dimensions, which have a good effect.

The chief feature internally is the chancel screen, which gives much character to the building.

The contractor was Mr. Fassnidge, of Uxbridge. The cost so far has been a little over 10,000*l*. J. OLDRID SCOTT.

SCULPTURE.

THE two busts which we give this week come respectively from the *Salon* and from the Royal Academy Exhibition. "Une Fille d'Eve," by M. Etcheto, from this year's *Salon*, is reproduced from a photograph; the bust entitled "Maidenhood," now exhibited at the Royal Academy by Mr. H. H. Armstead, R.A., is reproduced from a pencil drawing on toned paper, kindly made for us by the artist. As representations of ideal expression in two female heads, the one coquettish and *spirituelle*, the other grave and severe, they afford an interesting and characteristic contrast.

LONDON BRIDGE: FROM AN ETCHING BY MR. ERNEST GEORGE.

WE refer elsewhere in this number to Mr. Ernest George's fine portfolio of etchings of Old London; the present illustration is the most successful of one or two experiments which we have made in photo-lithographing from these etchings, with the permission of the author.

A special difficulty in photographing from etchings lies, in the first place, in the half tints, which are so delicate in the original, but tend to come out darker in the photolithograph; and secondly in the fact that the more powerful effects of etching result in a ridge-and-furrow surface on the plate, which is more or less transferred to the paper in printing; and these lines in relief cast their own shadows, imperceptible to the eye, but which the photographic plate finds out. In the present case these obstacles have been surmounted, and the lithograph represents the quality of the original work pretty fairly, without, of course, the inimitable tone of copper etching.

BATH-ROOM, GLEDHOW HALL.

THE special feature in this room is that, as far as possible, the entire surface of the walls and ceiling is covered with glazed porcelain so as to insure the utmost degree of cleanliness. The wall and ceiling lining is of Burmantofts faïence. The bath is of porcelain by Messrs. Cliff & Co.; and the woodwork of the doors and windows of mahogany and walnut. The drawing, of course, can give no idea of the scheme of colour, which is very elaborately carried out, the scale ranging from deep rich browns to pale greens and vellum tints.

The architects from whose designs the work has been carried out are Messrs. Chorley & Connon, of 15, Park-row, Leeds.

COMPETITIONS.

Baptist Memorial Church, Paisley.—Too late for examination this week we have received the report of the professional referee, Mr. James Sellars, President of the Glasgow Institute of Architects, on the designs submitted in this competition, which were reviewed in the *Builder* on the 4th of July, p. 9. The author of design No. 4, Mr. Hippolyte Blanc, of Edinburgh, has been appointed architect.

Wimbledon Free Library.—The plans prepared by Messrs. Potts, Sulman, & Hennings have been accepted.

Highgate Presbyterian Church.—In a limited competition for this building, about to be erected at the top of Highgate-hill, the plans sent in by Messrs. Potts, Sulman, & Hennings have been accepted.

Board Schools, Northfleet.—We are informed that the Northfleet School Board have accepted the plans for proposed schools sent in by Mr. Albert L. Guy, of Lewisham, in open competition.

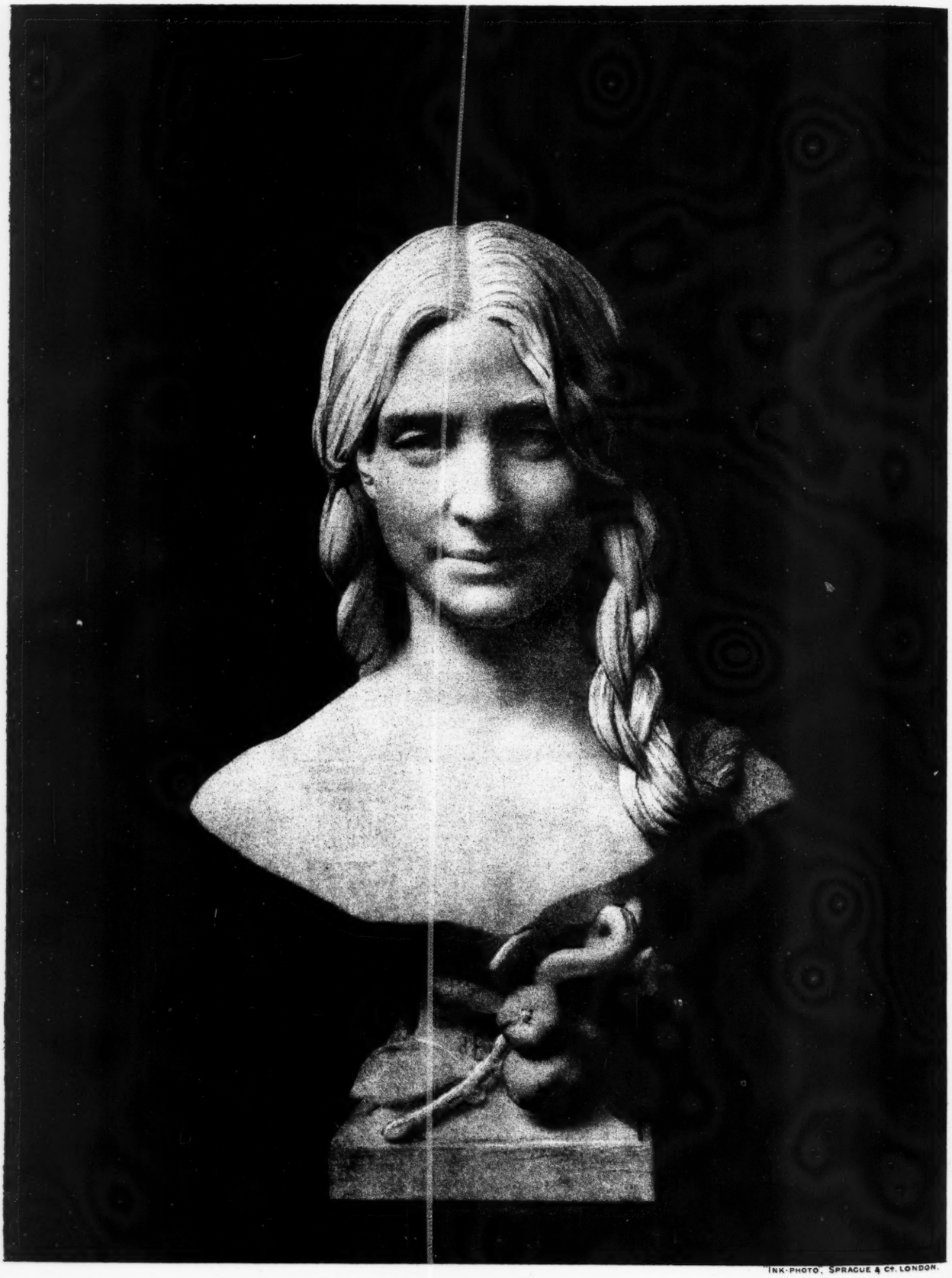
Cheltenham Grammar School.—The Honorary Secretary has received about seventy packages and packing-cases. They will be opened and the drawings hung as soon as possible. But competitors are reminded "that it will take a considerable time for twelve gentlemen, some of whom reside at a distance, to examine probably more than 400 drawings and 4,000 folios of reports. After this there must be formal meetings, and if a professional assessor should be then called in, further time will be required. It is, therefore, thought an award must hardly be expected before September, but an announcement will be made by advertisement as soon as possible."

INLAID CABINET: ITALIAN RENAISSANCE.

"INK-PHOTO," SPRAGUE & Cº, LONDON.

INTERIOR OF THE NEW PARISH CHURCH, SLOUGH.

Mr. J. OLDRID SCOTT, F.R.I.B.A. ARCHITECT.



INK-PHOTO, SPRAGUE & Co. LONDON.

SCULPTURE AT THE PARIS *Salon*.

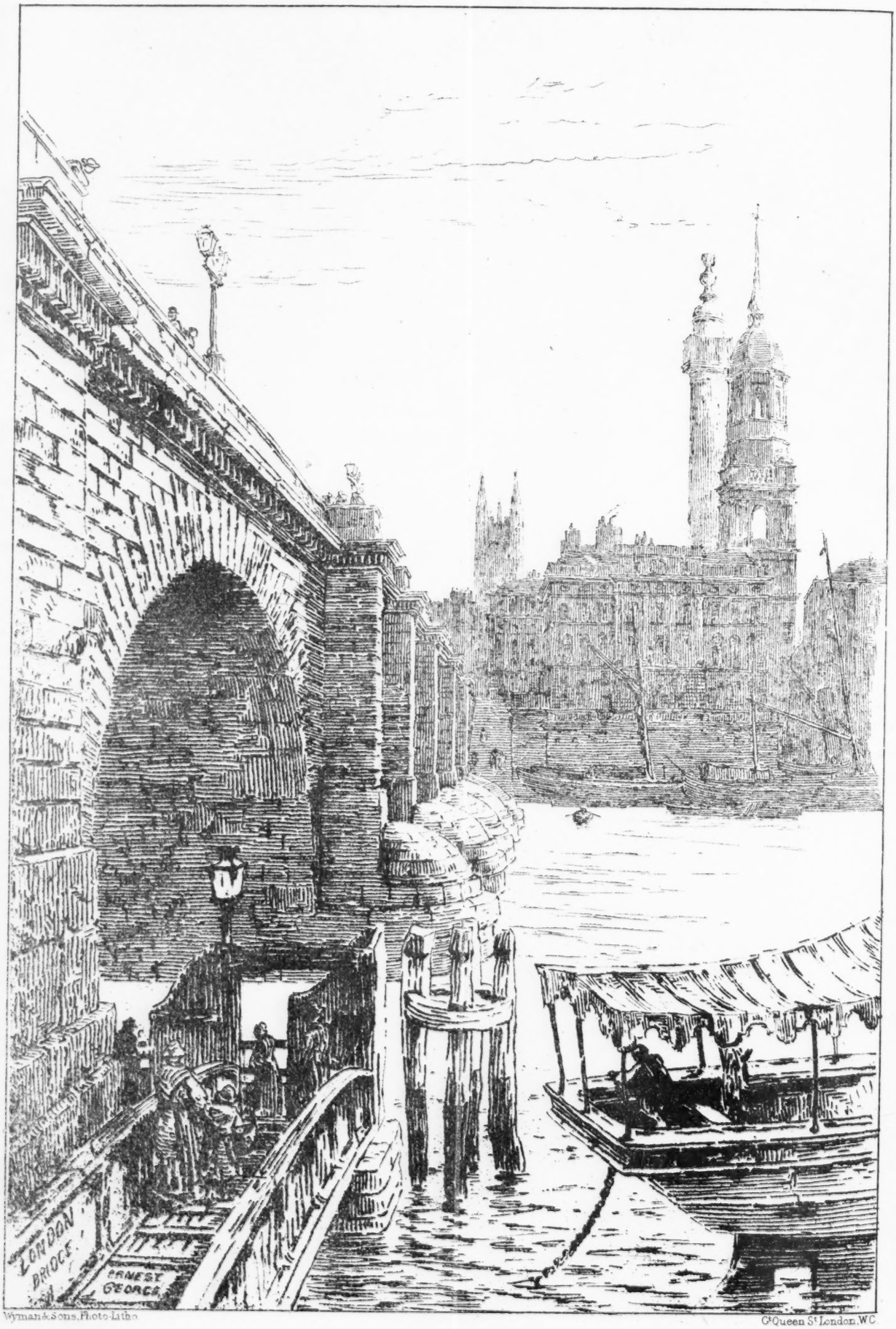
"UNE FILLE D'ÈVE." M. ETCHETO. SCULPTOR.

INK-PHOTO, SPRAGUE & Cº, LONDON.

SCULPTURE AT THE ROYAL ACADEMY.

"MAIDENHOOD." Mr. H. H. ARMSTEAD, R.A., SCULPTOR.

Reproduced from a Sketch by the Artist.



Wyman & Sons, Photo-Litho. 6 Queen St London, W.C.

LONDON BRIDGE.

Reproduced from an Etching by MR. ERNEST GEORGE.

CLEDHOW HALL. LEEDS.

J. Kitson Junr Esqre

BATH-ROOM IN BURMANTOFT FAIENCE.

Messrs Chorley and Connon. Architects.

Wyman & Sons, Photo-Litho

Ct Queen St London, WC.

THE INVENTIONS EXHIBITION.

PUMPING MACHINERY.

PUMPING MACHINERY has, during the last twenty-five years, made substantial progress, and may be said to have attained a considerable degree of perfection. The display at South Kensington, which is intended to illustrate this progress, it cannot be denied, fails in a large measure to do so, the exhibits being neither numerous nor complete, several types of pumps being entirely unrepresented. What are shown, however, are in most cases favourable specimens of their kind, and sufficiently numerous to repay a visit for their inspection.

Messrs. Tangye Bros., Limited, of Birmingham, exhibit some half-dozen pumps, which include one of Jefferies's improved direct-acting centrifugal pumping engines. The improvement consists in arranging the suction to enter only on one side of the disc: consequently the water is not split up, as is the case with most pumps of this type, and the friction of the water passing through the pump is therefore reduced. The centre of the pump diso is removed, so that no side-thrust is given to the spindle.

A compound condensing steam pumping engine is also shown here, the high and low pressure cylinders and condenser are all arranged on one piston-rod, which works direct into a double ram pump. This pump is fitted with outside valve-boxes, which are easily accessible for cleaning or repairs,—a very important point when pumps are used for raising impure water. We also noticed a modified form of "special" ram pump. This is arranged to work vertically, and is well adapted for boiler feeding. The engine valves on this pump are steam-moved slide-valves,—a plan that has much to commend it for this duty, and one that has of late been considerably extended.

A Jefferies's Patent Ram Pump and Boiler Feeder is amongst the other exhibits. The chief feature of this is the arrangement of the cross-head, with the connecting-rod working inside. This rod is made hollow, and through it the oil for lubricating the crank pin is allowed to pass. The sliding cross-head is cast in one piece, and has larger bearing surface than is usual. The working parts are protected from dust,—an important matter, but one often neglected,—by a sliding cover.

A new departure in the duty of pumps is exhibited by Messrs. Whitley Partners, Leeds. It is intended for pumping oil for lubricating the surfaces of steamship propellers, heavy engine bearings, &c. It is proposed by the exhibitors to lubricate the surface of the propeller blades, and thus reduce the friction of the water on them when in motion. To effect this they inject, by means of their pump, a quantity of oil, under pressure, upon the centre boss of the propeller, thus lubricating the various blades. The idea is novel, to say the least, and we should be glad to hear the results of its practical working.

A considerable display of pumping machinery is made by the Pulsometer Engineering Company, Limited, London, including examples of their well-known pulsometer pumps, "Deane" direct-acting pumping machinery, water filters, &c.

The "Deane" vertical pump, for sinking purposes presents several features of interest in its construction. It is of the double-plunger type, can be suspended from a chain if necessary, and can be raised or lowered as the depth of the water may require. It appears to have been designed to occupy as little horizontal space in the shaft as possible, and its details are very compact. We believe the chief feature claimed for the "Deane" pump is the simplicity of its details. The main and supplemental valves used are flat slide valves, and this departure we can particularly recommend for pumps subject to rough usage, such as the one under notice. The engine is direct-acting, and it is claimed by the makers that the up and down strokes of the piston being separately controlled by valves, the motion is made uniform, and the consumption of steam is therefore reduced. It can be made to swing aside when long pump-rods are used, so that they may be withdrawn without disturbing the pipes. This arrangement should be very useful in awkward or confined situations. Several "Deane" pumps of the horizontal type are also shown; these are of the internal plunger type, and are so arranged that one of the steam-valves is always open, so that there is no dead centre. A "Thames" patent filter, especially adapted for cleaning muddy water, is also exhibited. An advantage claimed for this filter is that it can be easily and rapidly cleaned,—a *sine quâ non* when dealing with muddy water. The filter consists of a copper-lined cylinder, into which is fitted a perforated piston covered with wire gauze. During the operation of filtering, this piston is fixed at the top of the stroke, and keeps the medium compressed against a perforated plate in the cover, through which the clean water passes away to the discharge-pipe. To clean the filter the piston is released and moved up and down, whilst a reverse current of water is allowed to pass through the filtering medium. This stand is very elaborately decorated.

Near here Messrs. W. & C. Burgess, of Brentwood, exhibit an example of one of the most ancient forms of water-lifts in existence, viz., the "Noria," adapted for being worked either by horse, bullock, wind, or steam power. In this form of water-lift a number of iron buckets are attached to an endless chain, which is made to revolve round a drum, motion being given to the drum by toothed gearing. The chain to which the buckets are attached is lengthened as the water sinks in depth. The lifts under notice are especially speeded for bullock power, which is largely used in India and the East, and as they combine certainty of action with extreme simplicity of construction, they are to be preferred for isolated districts, where skilled labour is not attainable, to many of the more elaborate forms of pumps. The lift exhibited is stated to be capable of raising 2,000 gallons of water per hour when worked by one bullock, or 3,000 gallons per hour when worked by one horse, and is usually employed for irrigation from wells about 30 ft. deep.

Messrs. Warner & Sons, of Cripplegate, E.C., exhibit in motion a vertical steam-pump which possesses several features of interest. In this pump the exhaust steam is carried into the suction in the form of a cone, after the fashion of an injector. The suction and delivery valves are fitted with air-chambers, and the engine valves are steam moved.

A chain-pump is also shown here, and, instead of ordinary chain, long wrought-iron links are used. The buckets, or lifting discs, are hollowed and a little rounded on top, and it is claimed that with this arrangement the pump may be run at a higher speed than is usual without the water splashing. The discs are made wide on the edge to prevent an excess of water passing back. This pump has a rough-and-ready look about it and should be serviceable.

Messrs. Hathorn, Davey, & Co., of Leeds, show working models of their Horizontal Compound Differential Pumping Engines with double-acting ram-pumps. These are adapted for underground and mining work, and are especially designed for forcing water to a great height. The suction and delivery valves and valve-boxes are constructed to withstand heavy pressures, and the general details appear to combine simplicity and strength, very important points in pumps such as these, from which extremely heavy duty is required.

A considerable display of steam-pumps for various duties is made by the Worthington Pumping Engine Company, 114, Queen Victoria-Street, E.C. This includes a compound direct acting steam-pump, an ordinary direct-acting steam-pump, a pressure-pump especially adapted for driving lifts, cranes, presses, &c.; and a water meter. As these pumps,—owing chiefly to questions in the House of Commons relative to the Soudan campaign,—have lately in this country attracted a considerable amount of attention, it may be of interest to notice briefly some of the chief points in their construction. Perhaps the most important feature in the Worthington pumps is the use of the ordinary form of steam-engine slide valve, working on a flat face over the usual form of ports, and this is a feature we can thoroughly commend, as this valve is simple, durable, and trustworthy, which is sufficiently proved by the fact that, perhaps, nine-tenths of the steam-engines made are fitted with it in preference to more complex forms. The valve is worked by means of a vibrating arm which swings through the whole length of the stroke. The pump-plungers are arranged to work through a deep metallic packing ring, which is neither adjustable nor elastic, it being asserted by the maker that it is cheaper to renew the rings or plungers as required than to have them made adjustable to wear. This is a question we cannot enter into here, but this dictum will probably not receive the assent of many engineers. With the object of relieving the working surfaces from any grit or mud which may be in the water, the pump plunger is placed some inches above the suction-valve, thus forming a small chamber into which the grit may fall; this, although apparently small, is a useful improvement. The water-ways are direct and of ample area. We must not omit to explain that the freedom from noise and vibration in these pumps is obtained by the peculiar arrangement of a duplex valve motion; this is effected by casting two cylinders and two pumps together so as to form one machine, and the working parts are so arranged that the right-hand division moves the steam valve of the left one, and *vice versâ*. Consequently, as one or other of the steam-valves must always be open, there can be no dead point, and the pump is always ready to start when steam is admitted.

One of the pumps in motion here is constructed on the compound, or high and low pressure principle, the steam being in the first instance utilised in a small cylinder which forces the piston forward; it is then expanded in a larger cylinder, which gives the return stroke. The pressure pump, for driving hydraulic lifts, &c., is arranged with double plungers, with external adjustable packing, and has several other features of interest, but our space prevents a more extended notice. Taken altogether, it cannot be denied that the Worthington pumps are thoroughly practical in their design and construction, and possess many points worthy of commendation.

Two steam pumps, a direct-acting and ram respectively, which possess some features of novelty, are exhibited by Mr. Joseph Bernays, Newgate-street, London; the novelty claimed consists "in the use of a connecting-rod of a length equal only to the radius of the crank, so arranged that it passes from above the crank at one end of the stroke to below the crank at the other end, whilst maintaining at every point its proper relative position to the crank. The rod thus turns completely over for each revolution of the shaft, and adding its own length to that of the crank at each end of the stroke, causes the piston travel to be four times the radius of the crank instead of twice." By this arrangement the inventor claims that side strain is avoided, and the use of cross-head guides dispensed with. The working details appear to have been well thought out, as all the chief parts likely to require adjustment or repair may be readily got at. This is a matter of importance, but one not always considered.

Messrs. Easton & Anderson, of Erith, show a duplex pump especially adapted for pumping raw juice in sugar-mills. It is arranged with steam jacketed cylinders, and the strokes are considerably longer than those usually found in pumps of this type. The general arrangement of the details of this pump is good, and valves are easily accessible for adjustment or repair. A small steam engine and pump especially designed for compressing air for ejecting torpedoes is also to be seen here. It is stated to be capable of working up to a pressure of 2,000 lb. per square inch.

A patent exhauster and pump (Greenaway & Kitt's) is exhibited by Messrs. Horn & Son, Waterloo-road, S.E. The chief novelty in this pump is an arrangement of four slides, which are worked from a shaft mounted eccentrically in the cylinder. It is claimed for this plan that extreme regularity of action is obtained, and the exhauster can be run at a high speed without noise. The cylinder of the exhauster is 2 ft. 6 in. diameter by 2 ft. 3 in. long, and it is stated to be capable of passing 80,000 cubic feet of air or gas per hour. It can also be used for pumping water, tar, slurry, &c.

A Bennison's patent rotary pump is exhibited by Messrs. Waygood & Co., Falmouth-road, S.E. It is claimed for this pump that the pressure is brought into an exact equilibrium on all moving parts, thus saving the loss by friction produced in rotary pumps when the pressure is allowed to act against one side of a drum and drive it against the bearings or abutment, which act as a brake. In this pump the periphery of the internal drum is divided into four spaces, the two opposite being of the same area and subject to the same pressure. The drum has four blades, which project radially from its centre at equal points, and

two of these for one quarter of a revolution are in contact with the wall of the cylinder, during which time they are exposed to the pressure on one side only, but during this time the only friction is that caused by the movement of the fluid, during the next quarter of a revolution these blades have an equal pressure on both sides. Each blade acts twice for a quarter of the distance at each revolution, consequently the four blades act for eight quarters or sweep out the water-space twice during one revolution.

A Burnett's Patent Steam Water-raiser is exhibited by Messrs. Körting Bros., 11, Pancras-lane, E.C. In this pump the water is raised by the direct action of the steam itself, pistons, &c., being dispensed with. It is claimed by the maker that as there are no moving parts, with the exception of the inlet and outlet valves, wear and tear are reduced to a minimum. This form of water-raiser is low in first cost, and as it will pump muddy or gritty water without damage to the working parts, builders and contractors may find it useful for temporary purposes, but, from our experience, for permanent work other forms are to be preferred, as the amount of steam used is undoubtedly large.

A direct-acting steam-pump is shown by Mr. T. H. Williams, 11, Queen-Victoria-street, E.C., the chief feature of which is that the main valve of the engine is arranged to receive its motion from a supplemental piston. The deep valves have interchangeable beats. The general design combines in a considerable degree compactness and strength.

In the mining section, Messrs. Hayward, Tyler, & Co., Whitecross-street, E.C., show a selection of their direct-acting steam pumps, including one with "cataract" or water-controlled self-governing valve gear. This gear is of somewhat novel construction, and is designed to prevent the pump running away, should the supply of water fail. It is suited for very high lifts. To avoid rapid and constant reversing of the piston, the length of stroke has been increased, which lessens considerably the friction of the water in the pump and the wear and tear of the valves. The general arrangement of this pump is good, and the workmanship excellent.

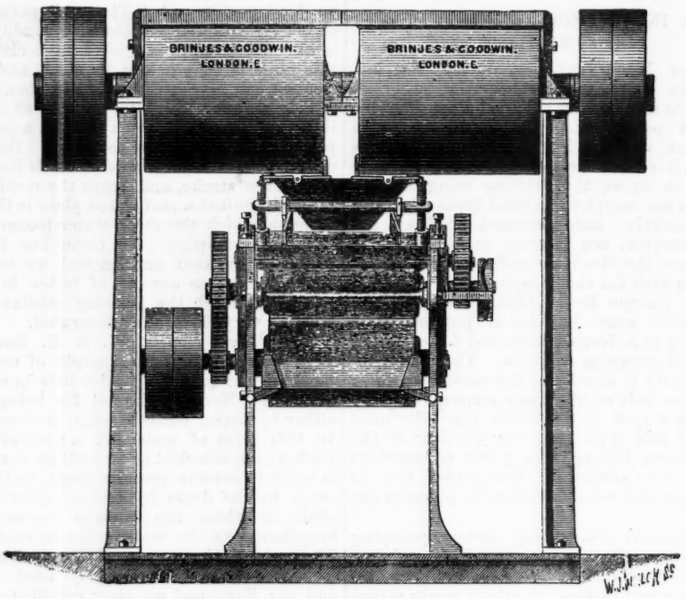
Several samples of Messrs. Tyler's universal pumps for general purposes are also shown. Those for high speeds are fitted with India-rubber ball valves in gun-metal seats, and those for high lifts, or for pumping hot water, with gun-metal valves. In both cases the cylinder valves are steam moved; one being arranged internally and the other externally. We prefer the latter plan.

A simple form of reversible rotary pump, adapted for pumping acids, &c., is shown by Mr. S. George, 30, Cumberland-street, S.W., and Messrs. Sharp, Stewart, & Co., of Manchester, exhibit several of their "Exhaust steam" and "Atlas" pattern injectors for boiler feeding.

THE WESTMINSTER HALL QUESTION.

As it affords a very good summary of the practical sense of the subject, we reproduce (from the *Times* report) the speech made by Mr. Courtney in the course of Wednesday's debate, upon which we briefly comment in another column.

Mr. Courtney said that as he had taken a good deal of interest in that project ever since it had been conceived by the right hon. member for Reading, and as he had more or less studied the proceedings of the Select Committee and the report at which they had arrived in regard to it, he wished to impress upon the Committee the propriety of not coming to a vote approving the scheme which had been suggested by Mr. Pearson. The law courts had been got rid of, and in what followed there was no idea of any want to be supplied. The only thing submitted to Mr. Pearson was what should be done in the condition of things that had been produced and revealed. When he saw the scheme he was struck with dismay, and he retained that feeling still. The removal of the law courts revealed a noble wall with flying buttresses. It was to have been expected that the architect would have said that, whatever we did, we should not obscure the front so presented, but that we should do what we could to strengthen what was weak, and that the front and the buttresses should be as far as possible preserved and left open to the public view. Instead of that the scheme was to hide the buttresses, to build rooms that were not wanted, or that could not meet any want, to reproduce something which never existed, and in the result to interfere with both the outside and the inside of Westminster Hall. He hoped the present First Commissioner would hesitate to approve of this scheme, which could very well be deferred for mature consideration. No further risk of injury need be incurred, because the reduced vote would leave enough to guard against that. There was an alternative plan, which was to complete the wall within the buttresses, leaving the noble sweep of buttresses visible. No one could say what the idea of the wall and buttresses was, but one must shudder at the idea of covering them with buildings. The stairs to be provided for descending and ascending into the proposed rooms and the way of passing from the lower rooms to the upper rooms would render them practically inaccessible and useless. They would probably have the effect of darkening the interior of Westminster Hall. The proposed building at the north-west corner of the site cleared would cut off the view of the wall and the buttresses from Parliament-street, and, if the Conference-room had to be ventilated by open windows, the room would not be free from the odours of the horse-shed below. If the design was good in itself, something might be said in favour of it, but it would hide one of the finest things of the kind in Europe, and there was no value in the design itself. It was a poor thing instead of a noble thing, and nothing would be lost by refusing to adopt it now, and leaving the matter open for further consideration.



A Combined Mixing and Grinding Apparatus.

A COMBINED MIXING AND GRINDING APPARATUS.

AT the Inventions Exhibition, Messrs. Brinjes & Goodwin, of Fieldgate-street, E., show a combined apparatus for mixing and grinding white lead and other paints. This is being worked by Messrs. Charles Turner & Sons, colour and varnish manufacturers, of Bloomsbury and Whitechapel, who are extensive users of these machines. We subjoin an illustration of the machine shown at the Exhibition, which is the third size generally made by the firm. It is capable of mixing and grinding from four to five tons of white lead per day. The operations are entirely automatic, the dry colour and oil being supplied from above to the mixers. An ingenious arrangement for measuring the proper quantity of colour is used in conjunction with these machines, although the exigencies of space do not permit of it being shown in the Exhibition. This consists of a pipe or shoot leading from the colour-bin, which is placed on a floor above. Working in this pipe are two slides, which are connected by a lever, much in the same way as the old style of gunpowder flasks. As one slide is withdrawn the other stops the supply, and so the necessary quantity is accurately measured, whilst at the same time there is no dust allowed to escape. This is a great point with such materials as white lead and other noxious powders, dust being the principal enemy to operatives in works of this kind.

The dry colour having been passed in this way to the wash-tubs or mixers, a certain quantity of oil is measured in a somewhat similar manner. There is a horizontal shaft through each mixer on which are mounted the mixing-knives. These are of such a shape that they form a part of a worm of a screw, being in fact like the blades of a screw propeller. The tendency of the screw is to propel the paint to one end, whilst the semi-liquid material falls constantly to its normal level, thus causing a complete incorporation of the various materials. When the paint is thoroughly mixed in this way, the slide-valve at the bottom end is opened, and the material allowed to run down on to the grinding rollers. The arrangement of these is peculiar, the aim being to bring the paint to as fine and homogeneous a consistency in as short a time and with as little labour as possible. There are, as may be seen by the illustration, three rollers, which are made of granite of a special kind. The motion for these is applied through differential gearing, as shown. The bottom or grinding roller is larger than the upper two, and hence would have a greater peripheral speed even if the number of revolutions were the same, but by means of the gearing the lowest roller runs at a greater number of revolutions than the others, and thus a much more efficient grinding power is obtained. In addition to this a lateral motion by means of a cam is given to the centre roller, the pinion by which it is driven being made long for the purpose.

Roller-mills for paint-grinding have been used for many years, but hitherto the flat grinding-stones appear to have held their own. This, no doubt, has been principally due to an impression that rollers only crush; but it will be seen that the improvements introduced by this firm have the necessary attrition for thoroughly incorporating the materials and producing a perfect paint, in proof of which the makers state that there are several of these mills employed in grinding artists' colours and the extremely fine paints required for the ceramic arts. On the occasion of our visit the machine in the Exhibition was engaged in mixing and grinding patent driers, well known to be one of the most difficult materials to deal with, which it certainly effected in a most complete manner.

On the same stand is shown one of Messrs. Brinjes & Goodwin's granite roller-mills, which are manufactured for grinding ink, chocolate, soap, &c.

ARCHITECTURAL ASSOCIATION.

EXCURSION TO ST. ALBAN'S.

THE first of a proposed series of summer excursions took place last Saturday afternoon, the 11th inst., to St. Alban's, when thirty-two members of this Association started from St. Pancras, and on their arrival were received by Mr. S. F. Clarkson and Mr. A. L. Forrest, who conducted them through the quaint old town to St. Alban's Abbey. The town stands, as our readers know, on the great north road, the old Saxon Watling-street, near the site of the Roman Verulamium. At the abbey Mr. Clarkson said Mr. John Chapple, who had

been advertised to take charge of the meeting, was unable to be present, and read a letter from that gentleman regretting his unavoidable absence through illness.

Mr. Clarkson then gave a long and succinct history of the Abbey, now converted into a cathedral, and rapidly pointed out its erections at different periods from the commencement, when a monastery was erected here by Offa, king of Mercia, A.D. 793, to commemorate the martyrdom of St. Alban, who suffered under the Emperor Diocletian in the year 297. The present abbey was commenced in 1077 by the Abbot Paul de Caen, and consecrated in 1115. He then traced, step by step, the progress of the work, the Early English bays of John de Cella, Trumpington's alterations, the catastrophe of 1230 when the eastern arm of the Abbey fell, the rebuilding and extension of the Lady-chapel and portions of the south side of the nave in the Decorated period, and the insertion of windows and other alterations.

Having completed his general description of the abbey, in which he was assisted by plans, Mr. Clarkson escorted the members round the building to more particularly point out the different periods and details to which he had referred, and also directed attention to the extensive alterations and works executed in 1878, under the superintendence of the late Sir Gilbert Scott, just prior to the lamented decease of that architect. The finding of the 2,000 fragments of St. Alban's shrine, built into a temporary wall between the retro-choir and ante-chapel, and its reconstruction by Sir Gilbert Scott, was described and shown, as likewise the shrine of St. Amphibalus. The Lady-chapel was for three centuries used as a grammar school. Here the exquisite character of the early fourteenth-century architecture was pointed out. The slype, Duke Humphrey's monument, and Abbot Ramryge's tomb having been inspected, the visitors entered the choir, where the Norman work was shown. Here it was also pointed out how the thirteenth-century architects had cut back arcades on the face of the walls. Since the former visit of the Association, in June, 1879, when Mr. Clarkson also acted as guide and *cicerone*, a good deal of work has been executed at the abbey, particularly the western external front, upon which we had occasion to comment in the *Builder*, August 11th, 1883. Other work is still in progress internally, Messrs. Longmire & Burge being the contractors. A new reredos over the altar has been executed by Mr. Harry Hems, of Exeter, but so far as we could learn no architect has been employed as consulting or superintending chief of these extensive works.

After inspecting the old Gate-house, the members subsequently visited St. Michael's Church, also under the escort of Mr. S. F. Clarkson, who here read a short descriptive history of it. This church was founded about the middle of the tenth century by Abbot Ulsinus, and stands at the western extremity of the town, within the walls of Verulam. Mr. Clarkson pointed out the marble monument to Lord Bacon, several brasses, some panelled remains of old carved bench-ends, and an old painting representing the "Day of Judgment," and other details of the church. The walls and masonry of ancient Verulam were next inspected, many traces of which exist in the neighbourhood. Here Mr. Clarkson produced two plans, one showing the walls, amphitheatre, and all that was known of ancient Verulam; the other plan was a map of Pompeii, and he pointed out the remarkable similarity between the two plans, both being of the same size and shape, and the streets in each run at right angles. Having perambulated the walls to a considerable distance, the members, at the conclusion of their visit, passed a unanimous vote of thanks to Mr. Clarkson.

Folkestone.—Christchurch, Folkestone, has been re-opened, with the addition of a new chancel, transept, and spacious organ-chamber and choir-vestry, built in the Early Decorated style. The chancel has an apsidal east end, with wood-groined roof; and the organ-chamber is vaulted with red brick and stone. The floors are laid with Maw's encaustic tiles. The basement vestry is floored with wood blocks. The works have been carried out by Mr. H. M. Moody, builder, Folkestone, from designs and under the superintendence of Mr. A. R. Barker, of Buckingham-street, Strand, London, at a cost of 4,500*l*.

A Combination Wardrobe.

FLANK WALLS.

AT the Wandsworth Police-court, John Wm. Watts, of Merton-road, Wandsworth, was summoned by the Metropolitan Board of Works, under 41 and 42 Vic., cap. 32, sec. 8, for unlawfully making default in setting back the external wall or front, and the external fence or boundary of the forecourts of certain houses or buildings in a road, passage, or way, connecting Southfields-road with West-hill, Wandsworth, to a distance of 10 ft. from the centre of the said road, passage, or way. Mr. Thos. Burton appeared for the Board, and Mr. Graham for the defendant.

The facts of the case were that the defendant had erected two houses fronting on Southfields-road, and flanking on to a public footpath connecting Southfields-road with West-hill, Wandsworth, without giving the statutory width of 10 ft. from the centre of the footpath.

Prof. T. Roger Smith, District Surveyor, having been called to prove these facts, and that the notice of the Board had not been complied with, Mr. Partridge held that the flank was the front for the purposes of the Act, and made an order, with costs, for the footpath to be widened within three months.—Defendant gave notice of appeal.

DISTRICT SURVEYORS' FEES.

THE DISTRICT SURVEYOR FOR EAST HACKNEY (NORTH) *v.* GREEN.

THE defendant was summoned at Worship-street Police-court, before Mr. Bushby, for fees in respect of a new house, of which he was the first occupier.

The Magistrate considered that if, as in this case, there was no occupier at the date of one month after the building was covered in, no occupier at any other time could be made liable for the District Surveyor's fees.—Summons dismissed, and two guineas costs allowed to defendant.

WESTMINSTER PALACE.

SIR,—The thanks of the profession are due to you for so loyally taking a side in this matter, and for taking the side of the artist who originally designed this magnificent structure. We are all proud of it,—provincials as well as Londoners,—and it ought to fare badly with that Government that emasculates the design of one of our great nineteenth-century architects. Every architectural society, as well as every individual architect feeling thus, ought to protest against the mere restoration of Westminster Hall, and insist upon the completion of a grand architectural conception.

THOMAS OLIVER, F.R.I.B.A.

Newcastle-on-Tyne, July 15.

DRESSING-ROOM COMBINATION FURNITURE.

SIR,—Being somewhat pressed for dressing-room accommodation, and wanting therefore to save every inch of floor space, I have had the piece of combination furniture made, of which the accompanying sketch gives a very good general idea. It has been admirably made in picked mahogany, solid throughout, from my drawings and full-size details, by Mr. J. Reid. The three small drawers under the dressing-table have been made special sizes to contain different articles of clothing. The basin has been made 19 in. in diameter; the top flange of it is fitted with an india-rubber washer, so as to insure that the water does not get between it and the marble top. The basin is fitted with a plug, and has an earthenware receiver under it for the dirty water. The sides of the washing stand portion are fitted with 4 in. square glazed tiles. Two small brackets are fitted in the angle, one for the water-bottle, and the other for a tooth-brush tray. Above the wash-stand, and well clear of head-room, there is a shelf for placing bottles, &c., on. The space underneath the longer drawers, and enclosed by a chintz curtain, is arranged, — one half for books, and the other half for travelling and other bags. As will be seen, the furniture stands on legs well clear of the floor.

FREDK. PINCHES.

"A QUESTION OF BUILDING LAW."

SIR,—In your issue of to-day [July 11, p. 73], Mr. Longley, architect, Bradford, raises a question which has frequently been the source of much annoyance and grumbling between owners and purchasers of land, even in this city and suburbs. I have never found it settled in any other way here than by the interpretation put on it by the Bradford Local Board. It certainly shows, as you remark, a very unnecessary hardship to be placed on some house-owners; but supposing Mr. Longley had been first in the field with his plans, and in forming the street had kept out the front of his building to the strict line, he would then have had the satisfaction of compelling others coming after him to adhere to that line. It would appear, then, that the purchaser first on the ground has the matter of forming the front entirely in his own hand, and can either keep it out to strict street-line, or set it back to suit his own convenience.

In Edinburgh we have, in some districts, streets formed with the end or flank houses brought out to the strict line of street, while the centre houses or

blocks are set back a distance of 6 ft. or so, so as to form a small plot of garden ground between the line of street proper and the front wall of the said houses so set back. To maintain the line of street in the latter case a low parapet-wall is erected with an iron railing on top, so that the pavement in front along the whole line of street is kept at a uniform width. There may be also, as you suggest, some other facts in connexion with Mr. Longley's case which he has not specified, and which would, no doubt, throw further light on the matter; but from the facts submitted I am of opinion that the Bradford Local Board have acted strictly within their rights.

GEO. PATERSON, Clerk of Works.

Edinburgh.

THE NATIONAL PORTRAIT GALLERY.

SIR,—Your paragraph on the above subject in last week's issue [p. 48] might possibly tend to mislead any one, not acquainted with the facts, into the belief that our Asbestos Patent Fireproof Paint had failed to protect the Exhibition from fire. Will you permit me to point out that the fire actually occurred in the *brick buildings* forming the India Museum, *adjoining* the Exhibition, and that no part of the buildings burned had been coated with our paint; and also, the great probability that if the woodwork in the roof near the flue where the fire originated had been protected by the paint, the disastrous fire would never have occurred?

This is borne out by the fact, alluded to by Sir F. Bramwell (the Chairman of the Council of the present Exhibition), in his Presidential Address at the Institution of Civil Engineers on 13th January last, when he remarked as follows:—

"The processes, more or less successful, that have been tried are so numerous that I cannot even pretend to enumerate them. I will, however, just mention one, the Asbestos Paint, because it is used to coat the wooden structures of the Inventions Exhibition. To the employment of this I think it is not too much to say those buildings owed their escape in last year's dry summer from being consumed by a fire that broke out in an exhibitor's stand, destroying every object on that stand, but, happily, not setting the painted wood-work on fire, although it was charred below the surface. I do not pretend to say that surface application can enable wood to resist the effects of a continued exposure to fire, but it does appear that it can prevent its ready ignition."

J. ALFRED FISHER,
General Manager and Secretary,
United Asbestos Company.

161, *Queen Victoria-street, E.C.*

*** The words to which our correspondent takes exception were avowedly and plainly quoted as those of Mr. Plunket, the First Commissioner of Works.—ED.

The Student's Column.

DESCRIPTIVE GEOMETRY.—PART II.

VIII.

Find the intersections of two cylinders.

WE construct outside the figure a plane, R, parallel to the generators of the two cylinders; for this, by any point, *r*, in space we draw two lines parallel to the generators of the two cylinders, and through the feet of these lines we carry the trace, R^h, of the plane which contains them (we do not require the vertical trace). We know that all the planes parallel to R will cut both cylinders along their generators; therefore, if we make a series of lines parallel to R^h cutting the two bases of the cylinders, the generators which start from the points of intersection, *g* and g^1, are contained in the same plane; this gives us the means of finding any

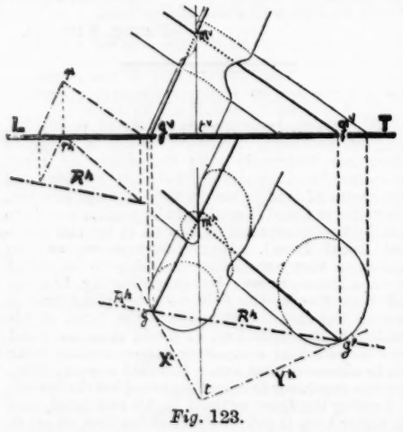


Fig. 123.

number of points, *m*, of the intersection of the cylinders. The tangent to the curve of intersection in the point *m* will belong to the planes X and Y, tangent to the cylinders in the same point *m*. The tangent to the curve will therefore be the intersection of the planes X and Y; at the meeting of their traces we find the point *t*, which belongs to the tangent, so that tm^h is the plan of the tangent, and $t^v m^v$ is its elevation. (See fig. 123.)

To draw the intersection I of the cylinders more rapidly, it is advisable to get, first, some of its main points, such as, for instance, those on the outlines, both of the plans and the elevations of the cylinders. For the generator A, which forms the outline of the plan of the cylinder, we know that the plane tangent to it will be vertical; therefore, the tangents to the curve in the points belonging to generator A will have their plans on A^h, so we can be sure that the plan I^h of the intersection will be tangent to A^h. Similarly we know that on the elevation I^v will be tangent to the outlines B^v of the cylinders; we shall do well to begin our drawing by marking the points where the intersection is tangent to the outlines, and we shall call them *a* or a^1, *b* or b^1, according as they belong to the outlines of the one or the other cylinder. (See fig. 124.)

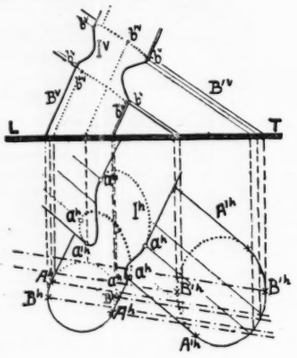


Fig. 124.

There are also other important points *e* which correspond to the limits of the positions R^h can take; we name these limits U^h. We find that R^h will only give us points of the intersection when it meets the bases of both cylinders, therefore all the positions we can select for R^h must be comprised between U^h and U^h, where it becomes tangent to one of the bases and cuts the other. Say U^h cuts one of the bases in *f* and is tangent to the other in f^1, and let us name F and F^1 the generators which start from these points. The plane U is tangent to the second cylinder, for it contains the generator F^1, and U^h is tangent to the base. The generator F of the first cylinder is in the plane U, and also in a plane Y tangent to the first cylinder, and therefore we may conclude that the generator F is tangent in the point *e* to the curve formed by the intersection of the two cylinders. We get the points such as e^h e^v, and note that the curve will in these points be tangent in plan to F^h and in elevation to F^v. (See fig. 125.)

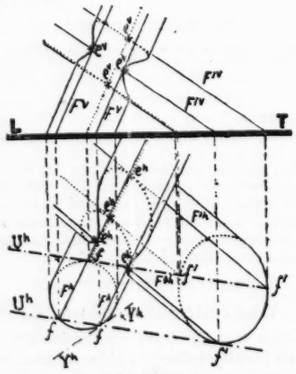


Fig. 125.

If the lines U^h are alternatively tangent to the base of each cylinder as in fig. 125, the

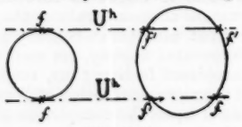


Fig. 126.

cylinders form only a *partial penetration*; if both the lines U^h are tangent to the base of the same cylinder and cut the other, then we have a *complete penetration*. (See fig. 126.)

In the complete penetration there are two intersections of the cylindrical surfaces: the one where the smaller cylinder enters the other, the second where the cylinder comes out again. In the partial penetration there is but one continuous curve of intersection, and the cylinders may be torn asunder; for this reason the French call this intersection "une courbe d'arrachement," or tearing curve.

In the figures 123, 124, 125, we have given separate diagrams for each part of the operation of drawing the intersections, but, of course, they are to be done simultaneously on the same drawing. As this problem is of the utmost importance for setting out the groins of vaulting, we strongly advise students to make on a large scale complete drawings of the intersections of cylinders, both in the case of complete and partial penetration; then construct models of the cylinders out of drawing-paper with the intersection cut out of the larger one, which they can do by developing the surface of the cylinders. To set out the problems neatly, it is advisable after drawing the bases of the cylinders to settle at once the direction of R^h, and deduce therefrom the directions of the generators of the cylinders. We therefore reverse the operation described in fig. 123; we draw R^h and place on it the feet *f* and f^1 of two lines, which we make to meet in a point *t*, then we adopt for the generators of the cylinders lines parallel to these. Another precaution to take in setting out the problem is to place the bases of the cylinders sufficiently distant from L T so that the plans of the intersections should be entirely below L T, otherwise the different parts of the drawing get inconveniently mixed. This done, draw a series of lines R^h, and number the intersections on the bases of the cylinders, as in fig. 127, and similarly number the points of the intersections. Considering the number of points necessary to delineate the intersections, it is advisable to use red ink to number the points of the intersection (not being able to use red ink, we shall indicate the generators by large numbers, and the points of their intersections by small numbers); but in the case of penetration as every generator of the smaller cylinder meets two generators of the bigger cylinder, it is advisable to distinguish the points of entrance and exit by putting plain numbers to the points of entrance and numbers with a dash ' to the points of exit. (See fig. 127.)

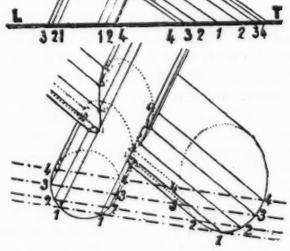


Fig. 127.

In drawing the intersections we must find out which parts thereof are seen and which are hidden. For a point of the intersection to be seen, it must belong to the meeting of two generators that are seen; we shall therefore take any point of the intersection and examine whether it is seen, then draw the curve with a full line until it meets one of the outlines of the cylinders. Generators of the one cylinder may be partly hidden by the surface of the other cylinder; this can only occur where the cylinders cross one another. To find out which of the cylinders is seen on plan, we carry up a vertical line from the point where the plans of two generators cross one another, and we find out on the elevation which generator is met highest by such a line; this will be the generator seen, the other one is hidden. When the penetration is only partial, the points of entrance and exit should be also carefully distinguished, the only difference being that at the limits U^h the entrance and exit will coincide, as in fig 127, so that the line of intersection is continuous and will join its starting-point.

PROVINCIAL NEWS.

Birmingham.—The Gothic Arcade is now opened to the public. This is the first building of the class (at least, so far as Birmingham is concerned) where the Early Gothic style has been taken as a basis upon which to found an architectural design. The combination of white glazed bricks, ornamental tiles, and stonework in the Snow-hill front is effective in appearance. The shops in the arcade are plainer in treatment, but the style of architecture has been consistently adhered to. Mr. C. Ede is the proprietor, and Mr. J. S. Davis the architect, both of Birmingham.——A large hotel in Corporation-street has just been completed. It is entitled the Chamberlain Arms. Mr. Yeoville Thomason was the architect. There are forty bedrooms, sitting-rooms, billiard-rooms for six tables, two large smoke-rooms, luggage-rooms, four cellars, private-rooms, coffee-room, 40 ft. by 25 ft., and all the other accessories of a first-class hotel. A considerable space of ground has been reserved for future extension. Mr. William Barnsley, of Birmingham, was the contractor, his estimate being 14,000*l.* The elevation is of a free Italian style, with granite and stone columns and pilasters, and Hopton Wood dressings. There is a considerable amount of stone carving, and terra-cotta panels have been used to a great extent.

Petersfield (*Hants*).—The engineer to the Local Board of Petersfield, Hants (Mr. Henry Robinson, C.E., of London), has been sinking a shaft in the neighbourhood of the town for supplying it with water. The site was chosen so as to get a supply from the Hythe Beds, and avoid the ferruginous water, which is found in the overlying Sandgate Beds. This, it is stated, has been successfully accomplished, inasmuch as, at a depth of between 70 ft. and 80 ft., what is described as an abundant supply of very pure soft water has been reached.

CHURCH-BUILDING NEWS.

Luton (*Kent*).—Christ Church, Luton, near Chatham, which has recently been erected by Messrs. Naylar & Son, of Rochester, from the designs and under the superintendence of Mr. E. R. Robson, F.S.A., was consecrated on the 14th inst. by the Bishop of Rochester. The church is faced on the outside with Kentish rag and Bath stone dressings, the internal face being plastered. It has a high-pitched open roof, covered with tiles, the floor being formed with wooden blocks, the same as used for the London Board schools. The seating and tower are at present omitted for want of funds. The cost up to the present has been upwards of 6,000*l.*

Preston.—Messrs. Jones & Willis, of Birmingham, have just made a pair of polished brass gas standards for St. George's Church, Preston, from the designs of Messrs. Garlick & Sykes, the architects of the building.

ROMAN CATHOLIC CHURCH-BUILDING NEWS.

London.—Designs for the new R.C. Church proposed to be built at Turnham-green, to replace the present one, which is much too small for the large and growing congregation, are being prepared by Mr. Kelly, architect, of Bedford Park.

Liverpool.—St. Mary's R.C. Church, Liverpool, erected forty years ago from designs by Augustus Welby Pugin, has been removed from its site in Edmund-street to another in Highfield-street. Mr. Peter Paul Pugin, a son of the architect of the building, has directed its removal and re-building, the work having been carried out by Messrs. Hughes & Stirling. The memorials to departed priests, which have been erected from time to time, have been transferred with the building, and, in the better light which the new site ensures, are better seen. A set of Stations of the Cross, in statuary, carved out of Caen stone by Mr. Wall, of Cheltenham, and fixed in massive stone frames, are prominently placed; and conspicuous in the sanctuary is a new tabernacle and throne, over which is a canopy elaborately carved. The brass and other fittings of the tabernacle and altars have been executed by Messrs. P. Connor, M'Intyre, & Co., of Liverpool. The steps by which the high altar is approached are of white Sicilian marble, and the pavement is composed of octagonal slabs of similar stone and diamonds of black marble, while the sanctuary itself is separated from the side chapels by oak stalls and screens.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

2,368. Lime Kilns and Brick Ovens. H. Hargreaves and others.

The top of the ordinary open lime-kiln is closed by a cover of fire-clay slabs in an iron frame. The covers are mounted on wheels running on rails, so that the kilns may be readily uncovered. Flues fitted with dampers run from the top of the kilns to an oven where the waste heat from the kilns is utilised for burning bricks or similar goods. The flues convey the heated current to a space between the outer and the pocket wall, and then passing through the floor, which is built of fire-bricks laid on edge, is discharged from the well in the centre into the chimney-flue.

4,879. Cement. J. Watson.

This patent relates to the separation of flints and other hard and heavy substances from the slurry before grinding. The slurry flows over a rocking inclined plane with a projecting lip, either fixed or removable by handles. The heavy substances sink into a well at one end of the inclined plane.

6,004. Non-conducting Covering for Heat. D. Barns.

Fibrous material such as flax waste, fire-clay, or other non-combustible material and spent tanners' bark are ground together with water to the consistency of mortar. The proportions vary according to the heat of the surface and the like, and where the strain on the composition is small an adhesive substance may be substituted for all or any part of the fibrous material.

5,594. Warm Air Fire-grate. J. Grundy.

A chamber is made behind the grate, through which air passes from an inlet in the wall under the back of the stove. A plate is fitted in the chimney round the smoke-pipe to prevent the hot air going up the chimney instead of through the ventilator, and apertures to allow the warm air to enter the room are made also under the chimney-breast.

3,763. Glazing Horticultural Buildings. C. & W. Allen.

Washers or pieces of thin metal are placed between the lower edge of the glass and the purlins on which it rests, to prevent the dripping of the water which may condense on the under surface of the glass. For glazing the sides of the building leaden bars of B or H section are used, strengthened by attaching them to iron tubes with copper wire.

3,123. Fireplace. W. T. Allen.

The chimney jambs are made of wrought or cast iron, which are held securely in their places by placing an iron mantelpiece on the top to which they are secured in any suitable way. The jambs and mantel may be ornamented according to taste.

5,075, Floors and Ceilings. H. J. Haddan.

The space between the joists is bridged over with hollow earthenware bricks, of various forms, which rest on the lower flanges of the joists, or on ledges of wood. The perforations may be longitudinal or transverse. The bricks may be moulded in position by pouring in any suitable material over a series of indiarubber tubes placed between the joists.

5,057, Flooring. A. G. Geary.

The wooden blocks of which the flooring is made are grooved at their sides; studs having heads at both ends are inserted in the grooves, and cement is run under the blocks. A layer of pitch or asphalte is interposed between the cement and the wood to resist damp.

7,783, Kilns for Bricks, Pipes, &c. C. Price.

An air-blast or fan is applied to kilns internally fired. The kilns have arched coverings, and fuel is fed in through openings on the top.

15,665, Wood Pavement. J. C. Davis.

Long lengths of wood are laid either longitudinally or transversely, and the interstices filled up with a strong cement.

APPLICATIONS FOR LETTERS PATENT.

July 3.—8,027, J. Adams, Silent Closing and Retaining Door-springs.—8,075, R. Snook, Improvements in Drill Braces.—8,088, J. Banks, Improvements in Gully or Trap Grates.—8,094, G. Andrews, Improved Balance for Hydraulic Lifts.

July 4.—8,106, D. Miller, Improvements in Cisterns for Flushing Water-closets.—8,138, H. Williams, Window-sash Fastener.—8,139, G. Redfern, Improved Process for Rendering Wood Incombustible.

July 6.—8,153, W. Thompson, Rendering Cements Hydraulic.—8,170, G. Budd, Apparatus for Ornamental Turning and Shaping.

July 7.—8,201, D. Willetts, Improvements in Spades and Shovels.—8,225, H. Paterson, Smoke-consuming Furnaces.

July 8.—8,254, W. Shorland, Weather Boards and Draught Excluders.—8,270, E. Thurkle, Electric Bell Indicators.—8,276, J. Newton, Electric Bell Indicators.—8,283, F. Jarvis, Earth Boring.

July 9.—A. Rockwell and F. Davis, Improvements in Sash Fasteners.

PROVISIONAL SPECIFICATIONS ACCEPTED.

6,085, H. Lake, Protection of Wood from Moisture.—6,273, B. Boothroyd, Apparatus for Ventilating Sewers and Drains.—6,319, J. Skinner and Others, Bolts for Doors and other Fastenings.—6,510, J. Johnson, Manufacture of Decorated Glass.—6,766, W. Parry, Improved Scaffold Fastener.—7,055, H. Johnson, Combined System of Warming and Ventilating Rooms and Buildings.—7,057, W. McGill, Opening, Closing, and Fastening Sliding Windows.—7,311, G. Garrard, Presses for Pressing Tiles.—7,526, J. Dougherty, Fastening and Securing Door-knobs to Spindles.—7,738, G. Pfeifer and M. Schutz, Apparatus for Heating Soldering Tools.—6,962, W. Chalk, Improvements in the Treatment of Granite and Granitic Stone.—6,981, R. Hill, Sewage Trap and Gully.—7,339, H. Snelgrove, Fireproof Ceilings and Floors.—7,542, J. Overing and A. Tulip, Construction of Buildings of Bricks or Blocks.—7,618, J. Clegg, Wood Floorings, Match Linings, &c.—7,693, H. Conway, Valves for Regulating the Supply of Water to Cisterns.—7,732, D. Webb. Pavement Lights.—7,849, J. Finnie, Fixing Roof Gutters to Carrying Hooks.—7,861, T. Goosey, Combined Rule and Protractor.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months.

11,503, G. Hurdle, Construction of Bell Cranks, Pulls, Levers, &c.—11,926, G. Cresswell, Pipes for Water-closets and Urinals.—12,425, H. Kettmann, Manufacture of Asphalte.—12,538, W. Mangnall, Improvements in Water-closets.—12,736, J. Blacka, Pointing Tool.—13,397, R. Goodman, Construction of Ventilator.—6,701, A. Link, Mounting Circular Saws for Cutting Piles.—12,368, J. Tottenham, Hoists for Raising Materials for Buildings in course of erection.—12,653, F. Lyte, Anti-fouling Paints for submerged Structures.—13,181, J. Rogers, Temporary Closing of Openings in Fireproof Partitions.—4,086, W. T. and C. Smith, Mathematical Drawing Instrument or Compass.—6,027, J. and T. Tulloch, Construction of Fireproof Buildings.

RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

JULY 2.

By NICHOLS, SON, & ALDER.

Gloucestershire, near Thornbury Station—"The Marlwood Grange Estate" of 273 acres, freehold	£13,600

JULY 6.

By G. BRINSLEY.

Walworth—8 and 10, York-street, and 1 and 2, Triangle Cottages, freehold	825
Camden-road — 35, Brecknock-road, 61 years, ground-rent 9*l.*	600

By J. H. GREEN & SON.

Acton, Bollo Bridge-road — Devonshire House, freehold	550
Mill Hill-road—Harptree Villa, freehold	445
Shepherd's Bush—9, Ashchurch-grove, 78 years, ground-rent 1*l.*	425

By GRAVES & SON.

Paddington—53, First Avenue, 88 years, ground-rent 4*l.* 4*s.*	230

By PHILLIPS, LEA, & DAVIES.

Hackney-road, Claremont Mews—A block of freehold stabling	250
Bethnal-green—9 to 15, Providence-place, long leasehold	1,520
Hackney—59, Clarence-road, 57 years, ground-rent 6*l.*	380
Dalston—54 and 56, Brougham-road, 60 years, ground-rent 7*l.*	650

By WILKINSON & SON.

Brighton—18, Brunswick-terrace, freehold	3,910

JULY 7.

By DEBENHAM, TEWSON, & Co.

Putney—The residence called "Putney House," and 2a. 1r. 6p., freehold	6,000

By CHINNOCK, GALSWORTHY, & Co.

Old Bond-street—An improved rent of 200*l.* a year, 26 years	2,710
Kingston-on-Thames—"Fern Hill Cottage," and 7a. 1r. 11p., freehold	1,750

By VENTOM, BULL, & COOPER.

Barnsbury—1, Twyford-street, 55 years, ground-rent 6*l.*	380
Islington—Ground-rent, 14*l.* 5*s.* a year, term 47 years	125

By HARDS, VAUGHAN, & JENKINSON.

Ashford—"The Rosery," and 3¼ acres, freehold	680
Farningham—Freehold pasture land, 7 acres	380
St. Mary Cray—"Kemp Cottage," with grounds	350
Sydenham—21, 25, and 27, West-terrace, 76 years, ground-rent 15*l.*	500

By FAREBROTHER, ELLIS, CLARK, & Co.

West Kensington—43, Charleville-road, 95 years, ground-rent 18*l.*	1,390
Strand—32, Essex-street, freehold	5,000
Tottenham—The freehold residence, Strathmore	810
1 to 8, Tottenham-terrace, freehold	1,765
Queen-street, a plot of freehold land	160
Long Sutton, Hants—"The White House" Beer House, and 2a. 3r. 24p.	410
Ditchingham, Norfolk—The Manor of Parnow, with its Rights, &c.	180
The Manor of Hedenham, ditto	420

JULY 8.

By EGGINTON & SON.

Reading, Berks—"The Whitley Park Estate," 859 acres, freehold	71,000

By RUSHWORTH & STEVENS.

Grosvenor-square — 14, Davies-street, 14 years, ground-rent 100*l.* £515

By ALFRED WATSON.

Speldhurst, Kent—The lease of "Speldhurst Lodge," term 39 years 550

LENNY & SMITH.

Halesworth, near — A small farm, containing 97a. 1r. 16p. 1,980

By FULLER, HORSEY, SONS, & CASSELL.

Blackfriars—The Bridge Wharf and Timber Yard 7,450
Ground rent of 200*l.* a year, reversion in 49 years 6,000

By DOWSETT & WOODS.

Hammersmith, King-street — "Guelph House," copyhold 2,200
5, Pomona-place, 23 years, ground-rent 6*l.* 300

By A. & A. FIELD.

Mile End—31, 33, and 35, Hunt-street, freehold ... 1,020
4 and 5, Hunt-place, freehold 450
1 and 2, Charlotte-place 360
44, Spital-street, freehold 640
Forest Gate—6, Odessa-road, freehold 310

JULY 8.

By DALE & SON.

Mile End—51 and 53, Harford-street, and 118, Skidmore-street, 22 years, ground-rent 4*l.* 610
55 and 57, Harford-street, 22 years, ground-rent 4*l.* 385
Leyton—Five plots of freehold land 205
Mile End—1 to 6, Sampson's-place, 73 years, ground-rent 18*l.* 405

By DRIVER & CO.

Guildford—Freehold ground-rent 60*l.*, reversion in 73 years 2,110
"The Bowling Green" public house, freehold ... 2,050
48 to 51, Quarry-street, freehold 2,060
10 to 14, Castle-street, freehold 240
6, Tun's Gate, freehold 255
"The Red Lion Inn," The Sessions House and Theatre, and 39½, High-street 3,125
60, 77, 78, 101, 102, 111, 122, and 162, High-street, freehold 9,620
"The Castle Inn," freehold 1,220
8 and 9, Swan-lane, and 7, Angel-gate, freehold... 500
Freehold Workshop and Stabling in Quarry-street 630
A freehold building site in Quarry-street 550
Bramley—Freehold enclosures of land, 52a. 3r. 13p. 3,000
Three enclosures of land, 8a. 1r. 20p. 760
Five freehold cottages and other buildings 655
Ewhurst — Downhurst and Woodland Farms, 104a. 1r. 36p. 2,200
Wonersh—Freehold house and grounds 650
Numerous freehold houses and cottages 3,265
"The Lodge," with three cottages 610
Cranleigh—Enclosure of freehold land, 10a. 2r. 19p. 1,395
Dunsfold—An enclosure of land, 0a. 3r. 24p. 55
Shalford—An enclosure of land, 2a. 1r. 28p 155
West Clandon—An enclosure of land, 0a. 3r. 10p.... 150

JULY 9.

By BEADEL & CO.

Whitechapel—28 and 30, Leman-street, freehold ... 1,800
26, Leman-street, and 1 and 2, Duncan-street, freehold 2,860
4 to 12, Duncan-street, freehold 1,460
34 and 35, Great Alie-street, freehold, and 1 and 2, Half Moon-passage, freehold 1,810

By H. T. CRAWTER.

Petersfield, near—"Steep Farm," 146a. 3r. 34p. ... 9,050

By NEWBON & HARDING.

Islington—20, Canonbury Park South, 50 years, ground-rent 5*l.* 5s. 510

By PROTHEROE & MORRIS.

Tottenham—1 and 2, Leigh Villas, freehold 600

By E. STIMSON.

Brixton—20 and 24, Winslade-road, 81 years, ground-rent, 15*l.* 790
89, Dalberg-road, 83 years, ground-rent 6*l.* 10s.... 360
Rotherhithe—1, Fawcett-road, freehold 600
Wandsworth, Amerland-road—"Skirbeck Villa," 94 years, ground-rent 6*l.* 10s. 350
New Cross—6 and 8, Knoyle-street, 76 years, ground-rent 10*l.* 240
22, Pepys-road, 72 years, ground-rent 10*l.* 610

By D. YOUNG.

Brixton—10, Brighton-terrace, 24 years, ground-rent 4*l.* 135

By C. C. & T. MOORE.

Poplar—193, 195, and 289, High-street, copyhold ... 800
2 and 4, Brunswick-street, copyhold 755

By DRIVER & CO.

Buckingham, near — "Lenborough Farm," 84a. 2r. 29p., freehold 2,400

By F. STOCKER.

Dulwich, Exchange-buildings—Ground-rents 120*l.*, reversion in 83 years 2,890
Ground-rents of 781*l.* 4s., reversion in 83 years, in 57 lots 18,228
9 to 14, Exchange-buildings, freehold 5,490

JULY 10.

By DENNANT & PORTER.

Westminster—18 and 18A, New-street, term 17 years and 8 years, ground-rent 7*l.* and 9*l.* 460

By BAKER & SONS.

Lambeth—"The Cottage Flint Glass Works," copyhold 3,000

By C. W. MILLAR.

Holloway, Prospect-road—Ground-rents of 163*l.* 16s., reversion in 96 years 4,150
Lysander-grove—Ground-rents of 56*l.* 14s., reversion in 96 years 1,455

By F. LEWIS & CO.

St. George's-in-East—1 and 2, Providence-street, 34 years, ground-rent 18*l.* 11s. 135
33 to 38, Providence-street, 34 years, ground-rent 18*l.* 18s. 555
10 to 32, Providence-street, 1 year, ground-rent 100*l.* 50
Improved Ground-rent, 55*l.* 6s. a year, term 34 years 550

Corrugated Iron.—Messrs. North & Son, of London-road, Southwark, well known as contractors for galvanised corrugated iron roofing and buildings, have secured additional premises and land in St. Bride-street, Ludgate-circus.

Miscellanea.

French Honours to English Architects. Mr. Edward I'Anson, vice-president of the Royal Institute of British Architects, Mr. R. Phené Spiers, F.S.A., and Mr. W. H. White, secretary of the Royal Institute of British Architects, have been elected honorary and corresponding members of the Société Centrale des Architectes, Paris.

The Towns of the Riviera and the late Cholera Epidemic.—The *Lancet*, in a special report on the effects produced at the fashionable health resorts of the Riviera by the outbreak of cholera at Marseilles and Toulon, remarks that the mortality was exceptionally low during the epidemic; yet so many persons kept away that a large number of bankruptcies resulted, and the municipal receipts were considerably reduced. Thus it unfortunately happened that, just at the moment when the strongest desire was manifested to undertake sanitary improvements, there was a total lack of means to carry them out. At Monaco, only the dread of cholera failed to keep away the visitors who crowded to the casino. But as there is no poor or indigent population at Monaco, and as the principality is at once the cleanest, the most orderly, and prosperous station on the whole Riviera, it is not surprising that the cholera failed to implant itself on this favoured spot. The fact that the population of Hyères did not suffer, though they harboured more than a thousand refugees from Toulon, was far more remarkable. The report describes the energetic measures taken by the municipal authorities, the vigorous disinfection practised, and the great improvement in the maintenance of cleanliness throughout the town. In spite of financial depression, a loan will be contracted to build sewers and make other sanitary ameliorations. At Nice 200 automatic flushing-tanks are to be added to the existing sewers. At Cannes a successful experiment of water-drainage has been made in the Vallon Provençal district. In the old town of Monaco a new sewer was hewn out of the solid rock, and at Mentone jetties are in course of construction to carry the sewage sixty mètres out into the sea.

Vermont (U.S.A.).—A proposal to place a series of commemorative windows in the University Chapel of Vermont, United States, has recently been inaugurated by the completion of two large windows, designed and executed by Messrs. James Ballantine & Son, Edinburgh. One window is a memorial of the late George Wyllys Benedict, who was professor from 1825 to 1847. The other window commemorates Professor James Marsh, late president of the University. The next window of the series is proposed to be dedicated in memory of Professor Joseph Torrey. Messrs. Ballantine have also in hand the central window for another University Chapel at Dartmouth, U.S. The design of "John the Baptist preaching in the Wilderness" is chosen, in reference to the missionary zeal of Wheelock, the first President of the College, 1769–1779, to whose memory the window will be inscribed.

Convalescent Home at Swanley (Kent). A new Convalescent Home, with chapel adjoining, has recently been erected at Swanley, in connexion with St. Bartholomew's Hospital, London, and was opened on Monday last, by their Royal Highnesses the Prince and Princess of Wales. The buildings have an effective appearance, and have been erected at a cost of upwards of 16,000*l.*, by Messrs. Naylar & Son, of Rochester, from the designs and under the superintendence of Messrs. I'Anson & Son, architects, of Lawrence Pountney-lane, London.

Constantinople Land and Building Company.—The directors of the Constantinople Land and Building Company, Limited, on the 11th of this month ratified the contract made between their manager and the German Government, for the erection of the new German embassy buildings at Therapia, on the Bosphorus. The land is a present from the Sultan to the Emperor of Germany. The engineer of the company, M. Cuigria, is a Frenchman.

The Societe Francaise des Asphaltes *v.* Farrell.—In this action for libel, brought against Mr. Farrell (secretary and manager of Claridge's Asphalte Company), the verdict was given for the defendant without the jury quitting the box. It is not necessary that we should enter into the merits of the case, which appears to have arisen out of trade rivalry.

American Competition with England for Engineering Work.—In Messrs. Matheson & Grant's Engineering Trades' Report for the past half year, just issued, it is stated that bridge-builders and makers of structural iron-work have been fairly well employed during the last six months, but at prices unprecedentedly low. The cheapness of iron and steel, and the development of labour-saving machinery, have, together, brought down the cost of production, the advantage going entirely to the purchaser, who has benefited also by the keen competition among manufacturers. In India, the extension of strategic lines in the north-west causes a regular demand for bridges, which may be expected to continue for some time, and there have been considerable purchases on some of the private Indian lines for spans up to 200 ft. There is an increasing demand for bridges and other structures from the Australian Colonies, where the growing expenditure on railways and other public works not only gives present employment to manufacturers at home, but creates a future need for renewals and extensions. Competitive tenders for an important bridge 3,000 ft. long, for an estuary near Sydney, have just been sent in from English and American manufacturers. It has long been known to English engineers, and the opinion is now being rapidly adopted in the United States, that the light and cheap American bridges, with pin connexions, are neither stable nor permanent enough to justify their use, but at present there are political influences in New South Wales which favour greatly the importation of railway material from the United States.

"The International College," Finchley-road.—On Wednesday the Marquis of Lorne opened the International College, Finchley-road, Hampstead, of which Mr. James Haysman is principal. This college has been built as an auxiliary to the Anglo-French College, Burgess Park, Finchley-road, and will accommodate about 100 boarders, as well as an additional 100 day scholars. The building is lofty, the exterior being of red brick relieved by white stone, and is situated in the Finchley-road, close to the Metropolitan, Midland, and North London Railway Stations. The style is Gothic, freely treated. There are four floors, crowned by a tower, in which there is an astronomical observatory. The first and second floors are devoted to living rooms and dormitories for the boarders and masters. On the ground-floor there are several class-rooms and a large hall, capable of seating 800 persons, with open pitch-pine roof. The basement comprises a dining-hall, large covered playground 90 ft. by 45 ft., and domestic offices. There is also a large open playground and a bathroom. The architect is Mr. Banister Fletcher, and the builders were Messrs. Aldridge & Jenvey, Mr. J. Stunt being their foreman in charge. The gas and interior fittings are by Messrs. Keeling, Teale, & Co.

Alterations in Amounts of Tenders.—A correspondent writes to complain that although his tender for a particular job was the lowest sent in, the builder who put in the next lowest tender obtained the contract by undertaking to do the work for a less amount than that of the lowest tender. This is complained of as "a most unfair transaction," which it unquestionably is.

Liverpool Architectural Society.—The fourth meeting of the Junior Debating Club was held at the Rooms, Cook-street, on the 13th inst., Mr. Edmund Rathbone in the chair. There was a fair attendance to hear the paper by Mr. Joseph H. McGovern (visitor) on "Valuations." Messrs. J. Nicholson, J. S. A. Mercer, the Chairman, and others, joined in the discussion which ensued.

The Victoria Hotel, Manchester, was opened on the 6th inst. It has cost 120,000*l.*, and has been erected from the designs and under the superintendence of Mr. William Dawes, architect, Manchester. We are compelled to hold over further particulars of the building until next week.

Saunders *v.* Pawley.—In reference to this case, which was briefly reported and commented upon in our last, we understand that notice of appeal has been entered to set aside the verdict on five distinct grounds.

The St. Paul's Ecclesiological Society will make a visit to Peterborough Cathedral, under the guidance of the Rev. W. D. Sweeting, M.A., this Saturday, the 18th inst. Train from King's-cross at 10.10 a.m.

A Registry and Exhibition of Architectural Appliances and Inventions.—Under the title of "The Permanent Exhibition, Registry, and Agency of Approved Architectural Appliances and Inventions," an institution likely to be very useful to the building trades was opened on Saturday last, at 10, Baker-street, Portman-square, under the management of Mr. Stephen S. Phillips, with free admission. A small rent is charged for space to exhibitors, and the institution realises a percentage commission on all orders taken through its agency. A very ingenious cabinet has been placed in it as a repertory for circulars and details of all kinds of appliances, arranged in sections for materials, glazing, roofing, decorating, drainage, and all other departments of building operations, to which architects or property owners may possibly refer with marked advantage in making choice of materials or accessories for dwellings, for designing residences, or for comforts and elegancies during occupation. We may take an opportunity of saying more about the undertaking on a future occasion.

Local Government Board Inquiry at Chiswick.—Major Tulloch, one of the Local Government Board's inspectors, held an inquiry at Chiswick on Wednesday last as to an application of the Chiswick Local Board for sanction of a loan of 4,910*l.* for private street improvements at Bedford Park. Some important points were raised. The clerk stated that, although they were now only making application for sanction of the loan, the works in question had been completed, and 3,900*l.* had already been paid to the contractor out of the general district-rate fund, since the audit took place in March last. The inspector cautioned the Board that if they proposed to seek sanction for a loan, and forthwith proceeded to spend the money out of the rates on the works before that sanction was obtained, and the audit took place in the interval, the transaction was a closed book, and the members of the Board might find themselves in difficulties if the sanction of the Local Government Board was, through any cause, refused to the borrowing of the money. It was stated that the Board had resolved to give the owners five years within which to pay the money; and to ask sanction for the loan to extend over five years; and that that was the cause of the delay in the Board making the application to the Local Government Board. Ratepayers present strongly objected to the Board's insisting that all footpaths of new streets should be tar-paved. The Clerk informed the Inspector that the Board had seen the insufficiency of tar-paving as it had been put down in Chiswick; and had resolved to require York stone to be laid on all private streets. The Inspector said he would not report in reference to the loan until he saw the tarred footpaths completed, which, it was stated, they would be a fortnight hence, at which time he would inspect the paths.

PRICES CURRENT OF MATERIALS.

TIMBER.	£. s. d.	£. s. d.
Greenheart, B.G. ....ton	6 10 0	7 10 0
Teak, E.I. ....load	12 10 0	15 10 0
Sequoia, U.S. ....ft. cube	0 2 6	0 2 9
Ash, Canada ....load	3 0 0	5 0 0
Birch ,, ...	3 0 0	4 10 0
Elm ,, ...	3 10 0	5 0 0
Fir, Dantsic, &c.	1 10 0	4 10 0
Oak ,, ...	3 0 0	5 0 0
Canada ,, ...	6 0 0	7 0 0
Pine ,, red	3 0 0	4 0 0
,, yellow	3 15 0	5 5 0
Lath, Dantsic ....fathom	5 0 0	6 0 0
St. Petersburg	5 0 0	7 0 0
Wainscot, Riga....log	3 0 0	4 10 0
Deals, Finland, 2nd and 1st...std. 100	8 0 0	9 0 0
,, 4th and 3rd	6 10 0	7 10 0
Riga	7 0 0	8 10 0
St. Petersburg, 1st yel.	10 0 0	17 0 0
,, 2nd ,, ...	8 0 0	9 15 0
,, white	7 0 0	11 0 0
Swedish....	7 0 0	17 0 0
White Sea	8 10 0	19 0 0
Canada, Pine 1st	18 0 0	32 10 0
,, 2nd	12 0 0	18 10 0
,, 3rd, &c.	7 0 0	10 10 0
,, Spruce 1st	9 0 0	12 0 0
,, 3rd and 2nd	6 10 0	8 0 0
New Brunswick, &c....	5 0 0	7 10 0
Battens, all kinds	4 0 0	13 0 0
Flooring Boards, sq. 1 in.—Prepared, first	0 9 0	0 13 0
Second	0 7 6	0 8 6
Other qualities	0 5 0	0 7 0
Cedar, Cuba....foot	0 0 3½	0 0 4
Honduras, &c.	0 0 3	0 0 4
Australian	0 0 3	0 0 3½
Mahogany, Cuba	0 0 5	0 0 7½
St. Domingo cargo av.	0 0 5½	0 0 7½
Mexican ,, ...	0 0 4	0 0 5
Tobasco ,, ...	0 0 4½	0 0 6½
Honduras ,, ...	0 0 4¼	0 0 6¼

TIMBER (*continued*).	£. s. d.	£. s. d.
Rose, Rio ....ton	7 0 0	17 0 0
Bahia....	7 0 0	16 0 0
Satin, St. Domingo .... ft.	0 0 8	0 1 0
Porto Rico	0 0 8	0 1 3
Walnut, Italian	0 0 4	0 0 5
METALS.		
COPPER—		
British, cke. and ingt. ....ton	47 10 0	48 10 0
Best selected	48 10 0	49 0 0
Sheets, strong....	55 10 0	56 0 0
,, India	52 10 0	53 0 0
Australian, fine cash....	54 10 0	56 0 0
Chili, bars ,, ...	44 0 0	44 10 0
IRON—Pig in Scotland ....ton	2 0 9	0 0 0
Bar, Welsh, in London....	5 0 0	5 7 6
,, ,, in Wales	4 12 6	4 17 6
,, Staffordshire, London	6 0 0	7 0 0
Sheets, single, in London....	7 10 0	9 0 0
Hoops ,, ...	7 0 0	8 0 0
Nail-rods ,, ...	6 0 0	7 0 0
YELLOW METAL....lb.	0 0 4½	0 0 4¾
LEAD—Pig, Spanish	0 0 0	0 0 0
English, com. brands	12 10 0	0 0 0
SPELTER—		
Silesian, special ....ton	13 10 0	13 12 6
Ordinary brands	13 7 6	13 10 0

METALS (*continued*).	£. s. d.	£. s. d.
TIN—		
Straits	96 15 0	97 5 0
Australian	96 15 0	97 5 0
English ingots....	97 0 0	0 0 0
TINPLATES—		
IC coke ....box	14 0 0	16 6 0
IX ditto	21 0 0	25 0 0
IC charcoal	17 0 0	20 0 0
IX ditto	26 0 0	27 0 0
OILS.		
Linseed ....ton	22 0 0	22 10 0
Cocoanut, Cochin	32 10 0	33 0 0
Ceylon	27 10 0	0 0 0
Copra....	26 10 0	0 0 0
Palm, Lagos	30 0 0	0 0 0
Palm-nut Kernel	26 10 0	0 0 0
Rapeseed, English pale....	25 10 0	26 0 0
,, brown	24 0 0	0 0 0
Cottonseed, refined	21 10 0	23 10 0
Tallow and Oleine	25 0 0	45 0 0
Lubricating, U.S.	7 0 0	10 0 0
,, Refined	8 0 0	15 0 0
TURPENTINE—		
American, in cks. ....cwt.	1 9 0	1 9 3
TAR—Stockholm ....brl.	1 2 0	1 2 6
Archangel....	0 14 0	0 14 6

CONTRACTS AND PUBLIC APPOINTMENTS.

CONTRACTS.

Epitome of Advertisements in this Number.

Nature of Work, or Materials.	By whom required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Sewage Works	Colne and Marsden L. B.	H. Bancroft	July 20th	ii.
Alterations to Closets, &c., Repairs, and Making-up Roads	Wandsworth Bd. of Wks	*Official*	July 21st	xiii.
Ironwork	Hackney Board of Wks	J. Lovegrove....	July 22nd	xiv.
Wrought-Iron Fence and Gateways to Church		C. J. Fergusson	do.	i.
Wood Paving	Vestry, St. Martin's-in-the-Fields	*Official*	July 23rd	xiii.
School Buildings, &c., Bury St. Edmunds....	E. Anglian, &c., School Company, Limited	W. Eade....	July 25th	ii.
Drainage, &c., and Laying-out of Cemetery...	Cheshunt Burial Board	*Official*	do.	xiv.
Sewage Works Extension	Tottenham Local Board	— De Pape	July 27th	ii.
New Post-Office, Halifax	Com. of H.M. Works ...	*Official*	do.	ii.
Repairs to Oak Fencing	Met. Asylums Board ...	A. & C. Harston	do.	xiv.
Public Mortuary, Ebury Bridge	St. George's (Hanover-square) Vestry	*Official*	do.	ii.
Formation of Roadway....	Tottenham Local Board	— De Pape	July 28th	ii.
Kerbing, Tar-Paving, Metalling, &c., Work...	Lewisham Brd. of Wks.	*Official*	do.	ii.
Making up Roadway, Paving, &c., Footways	Willesden Local Board	O. Claude Robson	do.	ii.
Sinking, &c., of a Well....	Hastings R. S. A.	Jeffrey & Skiller	July 29th	ii.
Yorkshire Paving Stone	Richmond (Surrey) U.S.A	*Official*	do.	xiii.
Hot-water Tank	West Ham Union	do.	do.	ii.
Blue Guernsey Granite	Romford Local Board...	do.	August 1st	xiii.
Alterations and Additions to Infirmary	Dartford Union	Ed. Hide	do.	xiv.
New Botley Drainage	Oxford Local Board ...	W. H. White	do.	xiv.
Vestry Hall Buildings	Chelsea Vestry.....	J. M. Brydon	August 4th	ii.
Brick Sewer and other Works	Willesden Local Board	O. Claude Robson	August 5th	ii.
Pipe Sewers, Manholes, &c.	do.	do.	do.	ii.
Alterations and Additions to Workhouse	Bromley (Kent) Union	J. Ladds....	August 6th	xiii.
New Church, Longridge, near Preston	The Committee.....	Longworth & Gardner	Not stated	ii.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.	Page.
Clerkship, Surveyor's Office	Bath U. S. A.	100*l.*	July 31st	xviii.
Surveyor	The Grocers' Co.....	Not stated	October 1st	xviii.

TENDERS.

For the erection of Wesleyan College at Canterbury. Mr. Charles Bell, F.R.I.B.A., architect. Quantities by Mr. H. Lovegrove, 26, Budge-row:—

Martin, Wells, & Co.	£9,999 0 0
Foster & Dicksee	9,999 0 0
G. & J. Green	9,935 0 0
Shrubsole	9,885 0 0
McCormick....	9,697 0 0
Bull & Sons	9,414 0 0
Denne & Son	9,379 0 0
Wallis & Clements	9,273 0 0
James Smith & Sons	9,197 0 0
Paramor & Son	9,180 0 0
T. Denne....	9,143 0 0
Allen & Sons	9,100 0 0
Judges....	8,633 0 0
Martin	8,630 0 0
Forwalk	7,890 0 0

For the erection of business premises, Goswell-road. Quantities by Mr. H. Lovegrove:—

Barton	£1,690 0 0
Lister	1,640 0 0
Hadman & Worsley	1,394 0 0
Shenton	1,353 0 0
Feary	1,300 0 0

For the erection of business premises, Hampstead-road. Quantities by Mr. W. Heelis and Mr. H. Lovegrove:—

Scurrah	£5,949 0 0
Clarke & Mannooch....	5,663 0 0
Anley	4,960 0 0
Shepherd....	4,854 0 0
Tarrant & Son	4,850 0 0
Goad....	4,725 0 0
Smith & Son	4,600 0 0
Scrivener....	4,579 0 0
Gibbons	4,495 0 0
Axford....	4,435 0 0
G. & J. Green	4,300 0 0

For the erection of a pair of villa residences at West Malling, Kent, for Mr. Henry Hoad:—

W. Yeomans, East Malling	£412 10 0
G. Hodges, West Malling *	375 0 0
Bishop Bros., Birling	360 0 0

* Accepted with reductions.

For internal cleansing, distempering, and other works at the Poplar and Stepney Sick Asylum, Bromley, Middlesex, for the managers. Messrs. A. & C. Harston, architects, 15, Leadenhall-street. Quantities not supplied:—

W. G. Lilley	£357 0 0
Vigor & Co....	332 0 0
W. Gibben....	329 0 0
A. W. Derby....	308 0 0
E. Proctor	300 0 0
W. Wythe, 17, Brownlow-street, Dalston (accepted)	225 19 0

For the erection of six girls' houses and other works in connexion therewith at the Bethnal Green Schools at Leytonstone, for the Guardians of Bethnal Green. Messrs. A. & C. Harston, architects, 15, Leadenhall-street. Quantities supplied:—

Hudman & Worsley	£13,764 3 8
C. H. Stewart	13,180 0 0
England & Thompson	11,830 0 0
C. Proctor....	11,800 0 0
J. Garrud....	11,759 0 0
Ward & Lamble	11,658 0 0
W. Martin	11,638 0 0
Thomerson & Son	11,490 0 0
G. Dobson....	11,420 0 0
J. Holland....	11,371 0 0
Gregar	11,337 0 0
J. H. Johnson....	11,180 0 0
Kirk Bros....	10,680 0 0
Jackson & Todd, 192, Hackney-road *	10,495 0 0
Scott, Walthamstow	10,043 0 0
Winkley	9,100 0 0

* Accepted.

For additions and alterations to Olden Lodge, Clifton College. Mr. C. F. Hansom, architect. Quantities supplied:—

Ball & Westlake	£931 0 0
W. C. Pugsley	777 0 0
W. H. Cowlin & Son	733 0 0
Eastabrook & Sons	724 0 0
Walters & Son	696 0 0
J. Perrott	688 0 0
E. Clark	685 0 0
R. Wilkins & Sons	666 0 0
J. Wilkins (accepted)	630 0 0

For new church of St. Dunstan, at Earle-road, Edge Hill, Liverpool. Mr. Hugh Roumieu Gough, architect, Carlton-chambers, Regent-street. Quantities by Mr. C. H. Gough, 5, Whitehall, S.W.:—

J. Bull & Son	£10,250	0	0
E. Gabbutt	10,145	0	0
S. Belham	9,527	0	0
J. Lister	9,458	0	0
Thos. Wontner Smith & Son	9,400	0	0

For alterations and additions at 27, Upper Berkley-street, for Mr. D. Johnston. Mr. H. Pope, architect. No quantities:—

Chapler	£1,666	0	0
Rhodes	1,221	0	0
Godden	1,200	0	0
Harris	1,199	0	0
Henwood	1,175	0	0
A. G. Bolding	1,167	0	0
Goodwin	1,042	0	0

For rebuilding No. 112, High-street, Marylebone, for Mr. T. W. Byatt. Messrs. Hudson, Son, & Booth, architects. Quantities supplied:—

Morter	£2,598	0	0
Nixon	2,583	0	0
Thomerson & Son	2,560	0	0
F. Higgs	2,559	0	0
Greenwood	2,487	0	0
Spencer & Co.	2,486	0	0
Hall, Beddall, & Co.	2,394	0	0

For the erection of school and class-rooms, out-offices, &c. on land adjoining St. Paul's Church, Foleshill, Warwickshire, for the St. Paul's School Building Committee. Mr. Herbert W. Chattaway, architect, Coventry:—

S. Mayo, Coventry	£546	0	0
J. Makepeace, Coventry	545	0	0
G. Punshon, Coventry	520	0	0
C. Haywood, jun., Coventry	485	0	0
A. Waters, Coventry	449	0	0
R. Wootton, Coventry	430	0	0
J. Kelley, Foleshill	411	15	0
A. Randle, Foleshill (accepted)	406	14	6
S. Wright, Foleshill	406	10	0

For the re-building of Nos. 38 and 39, Chalk Farm-road, N.W. Messrs. Alexander & Gibson, architects, 9, Great James-street, Bedford-row. Quantities by Mr. H. Burton:—

Manley	£3,387	0	0
Smith	3,349	0	0
Patman & Fotheringham	3,173	0	0
Beale	2,999	0	0
T. L. Green	2,859	0	0
Gregory & Bence	2,835	0	0

Accepted for erection of premises, Oxford street, for Messrs. H. T. Batt & Son, veterinary surgeons. Mr. H. M. Newlyn, architect:—

Miller & Brown, London and Greenock	£8,330	0	0

For works to Cannon Hall, Hampstead, for Mr. Henry Clarke. Mr. Peebles, architect. Quantities supplied by Mr. W. E. Stoner:—

	Repairs.			Additions.		
Patman & Fotheringham	£720	0	0	£1,190	0	0
Benstead & Sons	611	0	0	1,298	0	0
Simpson & Sons	659	0	0	1,229	0	0
Killby & Gayford	698	0	0	1,140	0	0
McCormick & Sons	628	0	0	1,043	0	0

For the erection of a villa at Claygate Park, for Mr. J Parnell. Mr. Walter J. N. Tomlinson, architect, Great James-street, Bedford-row. Quantities supplied by Mr. H. C. Leete:—

G. Roberts, Croydon (too late)	£1,112	0	0
Staines & Son, 61, Great Eastern-street	1,096	0	0
H. Ingram, Woking	1,090	0	0
Bables Bros., Surbiton-hill	1,077	0	0
J. Saunders, New Malden	1,037	0	0
Woolgar & Son, Horsham	1,015	0	0
P. Peters, Horsham	1,010	0	0
T. Barton, West Croydon	986	0	0
J. Wheatley & Sons, East Moulsey	985	0	0
W. Martin, Willesden-green (too late)	979	0	0
Lestie & Knight, Kensington	967	0	0
A. H. Harris, Sutton	872	10	0
C. P. Mills, Stoke Newington	854	0	0

For two pairs of villa residences, Snaresbrook, Essex, for Mr. J. Tilt. Messrs. Gordon & Lowther, architects:—

Barton, Walthamstow	£2,190	0	0
Hack, Poplar (one pair)	2,144	0	0
H. Dye, Old-street	2,140	0	0

For alterations and additions at "Highfield," Muswell Hill, for Mr. W. Comyns. Messrs. Leete & Hawley, architects, surveyors:—

J. Shoolbred & Co.	£1,897	0	0!
Patman & Fotheringham	1,277	0	0
Mills	890	0	0
A. H. Scanes & Son*	435	0	0!

* Withdrawn.

Erratum.—We are asked to state that the tenders for painting and repairs given at the bottom of the first column of p. 78 of last week's *Builder*, were not for the Workhouse at Homerton, but for the Infirmary at Bow. We are further asked to mention that the tender of Messrs. F. & F. J. Wood was accepted. We printed the list as it was received.

SPECIAL NOTICE.—Lists of Tenders frequently reach us too late for insertion. They should be delivered at our Office, 46, Catherine-street, W.C., *not later than Four p.m.* on THURSDAYS.

TO CORRESPONDENTS.

G. P.—P. S. & H.—C. P.—W. F. P.—C. H. P.—A. & H. (we should rather think it must have been published already).—E. K. (thanks; we had previous information).—G. J.—W. G. S.—E. W. W. (we published Professer Corfield's paper in full last week).—J. E. H.—J. T. P.—A. B.—J. C. W.—A. E. S. (should send amount.—J. M. H.—F. W.—B. & S.—C. W. D.—C. R. (thanks).—S. J. M.—T. W. H. (next week).

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news-items) which have been duplicated for other journals, are NOT DESIRED.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; all communications relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

PUBLISHER'S NOTICES.

THE INDEX and TITLE-PAGE for Volume XLVIII. (January to June, 1885) were given, as a Supplement, with the Number of July 11th.

A COLOURED TITLE-PAGE may be had, gratis, on personal application at the Office.

CLOTH CASES for Binding the Numbers are now ready, price 2s. 6d. each; also

READING-CASES (Cloth), with Strings, to hold a Month's Numbers, price 2s. each; also

THE FORTY-EIGHTH VOLUME of "The Builder" (bound), price Twelve Shillings and Sixpence, will be ready on the 22nd inst.

SUBSCRIBERS' VOLUMES, on being sent to the Office, will be bound at a cost of 3s. 6d. each.

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE, AND GENERAL ADVERTISEMENTS.

Six lines (about fifty words) or under ..... 4s. 6d.
Each additional line (about ten words) ..... 0s. 6d.

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PREPAYMENT IS ABSOLUTELY NECESSARY.

*** Stamps *must not* be sent, but all small sums should be remitted by Cash in Registered Letter or by Money Order, payable at the Post-office, Covent-garden, W.C. to
DOUGLAS FOURDRINIER, Publisher,
Addressed to No. 46, Catherine-street, W.C.

Advertisements for the current week's issue must reach the Office before THREE o'clock p.m. on THURSDAY.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

SPECIAL.—ALTERATIONS in STANDING ADVERTISEMENTS or ORDERS TO DISCONTINUE same, must reach the Office before TEN o'clock on WEDNESDAY mornings.

PERSONS Advertising in "The Builder," may have *Replies addressed to the Office*, 46, Catherine-street, Covent-garden, W.C. *free of charge*. Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied DIRECT from the Office to residents in any part of the United Kingdom at the rate of 19s. per annum PREPAID. To all parts of Europe and America, 26s. per annum. To India, China, Ceylon, &c. 30s. per annum. Remittances payable to DOUGLAS FOURDRINIER, Publisher, No. 46, Catherine-street, W.C.

Best Bath Stone.
WESTWOOD GROUND,
Box Ground, Combe Down,
Corsham Down,
And Farleigh Down.
RANDELL, SAUNDERS, & CO., Limited,
Corsham, Wilts. [ADVT.

Bath Stone.
ALL DESCRIPTIONS OF BEST QUALITY.
PICTOR & SONS,
BOX, WILTS. [ADVT.

Doulting Freestone.
THE CHELYNCH STONE. The stone from these quarries is known as the "Weather Beds," and is of a very crystalline nature, and undoubtedly one of the most durable stones in England.
THE BRAMBLEDITCH STONE. Is of the same crystalline nature as the Chelynch Stone, but finer in texture, and more suitable for fine moulded work.
HAM HILL STONE.
Greater facilities have been provided for working these quarries, and the stone can be supplied in large quantities at short notice.
Prices, and every information given, on application to CHARLES TRASK & SONS, Norton-sub-Hamdon, near Ilminster, Somerset.
London Agent — Mr. E. WILLIAMS, 16, Craven-street, Strand, W.C. [ADVT.

Doulting Free Stone
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